

November 1, 1870.

Professor Newton, F.R.S., V.P., in the Chair.

The Secretary read the following reports on the additions to the Society's Menagerie during the months of June, July, August, and September, 1870:—

The total number of registered additions to the Society's Menagerie during the month of June 1870 was 195, of which 47 were by birth, 31 by presentation, 84 by purchase, 13 by exchange, and 20 were animals received on deposit. The total number of departures during the same period, by death and removals, was 121. Amongst the additions the most remarkable were:—

1. Two Australian Sacred Ibises (*Ibis strictipennis*, Gould, B. Austr. vi. pl. 46), purchased June 13th.

The acquisition of these two birds is of much interest, as enabling the naturalist to compare together living examples of the four closely allied forms of Sacred Ibis—*Ibis æthiopica* of Africa, *I. bernieri* of Madagascar*, *I. melanocephala* of S. Asia, and *I. strictipennis* of Australia.

2. A male Leonine Monkey (*Macacus leoninus*), purchased June 14th from a London dealer.

In July 1869 we obtained by presentation from Capt. R. A. Brown, as already recorded in these 'Proceedings' (1869, p. 467), a female Macaque Monkey, which had been brought by H.M.S. 'Vigilant' from the Andaman Islands. In a notice of the habits of this Monkey, published in 'Land and Water' of July 24th, Mr. Bartlett, considering the species to be undescribed, proposed to call it *Macacus andamanensis* (Land and Water, viii. p. 57), which name, I observed in my above-mentioned notice of it in the Society's 'Proceedings,' "would stand if the validity of the species should be confirmed by future researches." "Andaman Jenny," as this Monkey was called, has attracted considerable attention amongst the visitors to the Society's Gardens by smoking pipes and playing other extraordinary tricks, of which Mr. Bartlett has given an account in the article above referred to. Her fame having reached as far as the islands from which she was brought, Capt. Hamilton, commanding a detachment there, was induced to write to Dr. E. Hamilton, F.Z.S., to inform him that it was an error to suppose that "Andaman Jenny" was really a native of these islands, she and several companions of the same species having been brought over to Ross Island, one of the Andamans, from the adjacent mainland of Burmah†. Thus it appeared that, even if Mr. Bartlett was right in referring this Monkey to a new species (of which, I confess, I had at the time serious doubts), his name would require alteration. The matter stood thus until June last, when Mr. Bartlett informed me one

* On the distinctness of this form from *I. æthiopica*, see my remarks, P. Z. S. 1870, p. 381.

† Cf. P. Z. S. 1870, p. 220.

morning with great satisfaction that he had secured for the Society on approval a male of the so-called "Andaman Monkey," and that there could be no longer any doubt of its being a most distinct species, and quite new to us in this country. On visiting the Gardens next day to examine our new acquisition, I found that Mr. Bartlett's statement was amply justified by the facts. The male Monkey was certainly of a species quite new to myself and others, and one of which there was no specimen in the British Museum. But on showing it to Mr. Blyth, his experienced eye at once detected that it was of a species which had been received in Calcutta from Aracan in 1844, and, after several attempts to refer it to described species †, had been named by him *Inuus leoninus*.

I now exhibit a drawing by Mr. Wolf of this remarkable addition to our series of living *Quadrumana*. The species, as has been already observed, is no doubt most nearly allied to the Pig-tailed *Macacus nemestrinus*, but is at once recognizable by the peculiar crescent-shaped arrangement of the elevated hairs forming the crest on the head, the more vivid colouring, and the longer tail. An exact description must be deferred until the decease of the animal; but the accompanying figure (Plate XXXV.) will render it easily recognizable.

The total number of registered additions to the Society's Menagerie during the month of July 1870 was 199; of these 27 were by birth, 31 by presentation, 121 by purchase, 1 by exchange, and 19 were received on deposit. The total number of departures during the same period, by death and removals, was 168.

The most remarkable additions during the month of July were:—

1. Three Trumpeter Swans (*Cygnus buccinator*), hatched on the Three-island Pond in the Society's Gardens on July 6th, being the first instance of this American species having bred in the Society's Gardens, and, as far as it is known, in Europe.

The Cygnets of the Trumpeter Swan are of a uniform ashy grey in their first plumage, darker than in the corresponding plumage of *C. olor*. They are now moulting, and seem to be whiter on the breast and darker on the back than the Common Swan at the same period.

On the same day also (July 6th) a large and valuable collection of living animals, sent from the Zoological Gardens of Santiago, in Chili, under the care of Mr. Albert Weisshaupt, arrived in the Society's Gardens. Of these the following selection, embracing examples of all the best species, was acquired for the sum of £462:—

MAMMALS.

*2 Chilian Skunks	<i>Mephitis chilensis</i> .
*2 Magellanic Jackals	<i>Canis magellanicus</i> .
3 Patagonian Cavics	<i>Dolichotis patachonica</i> .
3 Chinchillas	<i>Chinchilla lanigera</i> .
2 Coypus	<i>Myopotamus coypus</i> .

† *Macacus nemestrinus*, Blyth, J. A. S. B. xiii. pt. 1, p. 473. "*Inuus arcoides*, Is. Geoffr.;" Blyth, *ibid.* xvi. pt. 2, p. 731. *Inuus leoninus*, Blyth, *Cat. Mamm. Mus. As. Soc. Beng.* p. 7. *Hab.* Aracan.



Smith lith

M & N Hanhart imp

MACACUS LEONINUS.

BIRDS.

- 3 Patagonian Conures *Conurus cyanolyseus*.
 1 Slight-billed Parrakeet *Ilenicognathus leptorhynchus*.
 1 Condor *Sarcorhamphus gryphus*.
 *8 Black-winged Doves *Metriopelia melanoptera*.
 6 Spotted Doves *Columba maculosa*.
 *5 Auriculated Doves *Zenaida auriculata*.
 3 Black-faced Ibises *Ibis melanopsis*.
 3 Cayenne Lapwings *Vanellus cayennensis*.
 *3 Burmeister's Cariama *Chunga burmeisteri*.
 4 Black-necked Swans *Cygnus nigricollis*.
 *2 Coscoroba Swans *Cygnus coscoroba*.
 *6 Rosy-billed Ducks *Metopiana peposaca*.
 *8 Chilian Pintails *Dafila spinicauda*.
 *6 Chiloe Widgeons *Mareca chiloensis*.

REPTILES.

- 1 Annulated Terrapin *Geoclemmys annulata*.
 1 Large-footed Land-tortoise *Testudo elephantopus*.
 *2 Chilian Land-tortoises *Testudo chilensis*.

It will be observed that the whole of this collection consisted of animals of great interest, no less than 11 out of the 22 species (those marked *) having never been previously received alive by the Society. Those more especially calling for remark are:—

2. MEPHITIS CHILENSIS.

This is a smaller species of Skunk than any of which we have hitherto received living examples. Our pair, which seem to be adult, measure only 9 inches, and the tail $6\frac{1}{2}$ inches; total, from nose to end of tail, $15\frac{1}{2}$ inches in length. The male and female are nearly alike, black, with a narrow white lateral stripe on each side, nearly joining on the forehead. This stripe is more elongated in the male. There are traces of white hairs at the base of the tail. The animal seems to agree best with the *Conepatus nasutus*, var. 3. *chilensis*, of Dr. Gray's Catalogue of Carnivora (p. 135). But the confusion amongst the different species of Skunks is very great.

These animals are very tame, and allow themselves to be handled with impunity.

3. *CANIS MAGELLANICUS*, Gray; Waterhouse in Zool. Voy. Beagle, ii. p. 10, pl. 5.

A pair of this fine and distinct species of *Canis*, of which we have never before received living examples. The pupil is round in this species.

4. The specimen of the Condor (*Sarcorhamphus gryphus*) received in the present collection is very remarkable for the enormous development of the wattles on the head and throat, and resembles the figure of this bird given in Temminck's Pl. Col. 494, from a specimen formerly in the Leverian Museum.

5. *CHUNGA BURMEISTERI*. (Plate XXXVI.)

The acquisition of living examples of this recently discovered second form of the peculiar Neotropical family *Cariamidæ* is of special interest.

Burmeister's *Cariama* was discovered by the eminent naturalist whose name it bears in the provinces of Catamarca and Tucuman, in the north of the Argentine Republic, in 1859, and was first described by Dr. Hartlaub in this Society's 'Proceedings'*. Soon afterwards Reichenbach† gave the species the generic rank which it seems entitled to, and called it *Chunga burmeisteri*. As this remarkable bird is very little known, and specimens of it are very rare, the accompanying drawing (Plate XXXVI.) will be acceptable. We may hope that at a later period some one will undertake a special comparison of its structure with that of *Cariama*, which has been so well worked out by Burmeister‡.

6. *CYGNUS COSCOROBA*, Mol. ; Gray and Mitchell, Gen. of Birds, iii. pl. 166.

These are the first examples of this beautiful little Swan that have reached us alive. They were in poor condition when they first arrived, but are now in good health, and may, we hope, breed next spring ; so that there is some chance of the introduction of this fine species into our ornamental waters.

7. *METOPIANA PEPOSACA*§. (Plate XXXVII.)

A single male of this fine Duck was received in 1867||. From the present collection we have obtained three pairs, so that there is every hope for the continuance of the species.

8. *DAFILA SPINICAUDA*. (Plate XXXVIII.)

There has been a good deal of confusion about this elegant species of Pintail, of which we have now for the first time received living specimens. Dr. Burmeister has been inclined to consider that there were two allied species—*D. spinicauda*, from the east of the Argentine Republic, and *D. oxyura*, from Mendoza, Chili, and Peru (La Plata-Reise, ii. p. 515); but, as Mr. Salvin and I have already stated (P. Z. S. 1869, p. 157), we believe that he has been in error upon this point. *D. spinicauda* is closely allied in shape and form to the so-called Bahama Duck (*D. bahamensis*), which has long been an inhabitant of the Society's Gardens, but is readily distinguishable by its yellow-marked bill and other peculiarities. The species, which has never been figured, is well represented in the accompanying drawing (Plate XXXVIII.).

* P. Z. S. 1860, p. 335.

† Handb. d. Sp. Orn. Tauben, p. 159.

‡ "Beiträge z. Naturgeschichte d. Seriema," Abh. Nat. Ges. Halle, i. p. 11 (1854).

§ *Anas peposaca*, Vieill. Enc. Méth. p. 357. *Metopiana peposaca*, ScL et Salv. P. Z. S. 1868, p. 146.

|| See P. Z. S. 1867, p. 687.



J. Smit lith

M & N Harhart imp

CHUNGA BURMEISTERI.





J. Smit

$\frac{1}{3}$



J. Smit

1/3

J Smit lith.

M & N Hanhart imp

DAFILA SPINICAUDA

9. MARECA CHILOENSIS (King).

The Chiloe Widgeon also, although well known in collections, is new to our series of living *Anatidæ*, and forms a fine addition to them. It is sufficiently well figured by Eyton in his 'Monograph' (pl. 31). The sexes (contrary to the usual rule in this section of the *Anatidæ*) are coloured nearly alike.

10. GEOCLEMMYS ANNULATA, Gray.

This Tortoise was described and figured by Dr. Gray in our 'Proceedings' (1860, p. 231, t. 29), from specimens obtained by Mr. Fraser on the coast of Ecuador. The present example was probably brought to Santiago from the coast of Peru or Ecuador, as Gay (*Fauna Chilena*, ii. p. 8) and other authorities assure us that no species of Chelonian is found in Chili.

11. TESTUDO ELEPHANTOPUS, Harlan.

Dr. Gray has identified one of the two Tortoises which we obtained in the present collection with the above-named species, originally described by Harlan as coming from the Galapagos Islands. The present individual was probably imported into Chili from the same quarter as the *Geoclemmys annulata*, as Mr. Cope (*Pr. Ac. Sc. Phil.* 1868, p. 96) has recorded the occurrence of the species on the coast of Ecuador.

12. TESTUDO CHILENSIS, Gray.

Testudo (Gopher) chilensis, Gray, *Ann. Nat. Hist.* ser. 4, vol. vi. p. 190.

Dr. Gray has lately described this Land-tortoise, of which we received two specimens, as a new species, and has proposed to call it *Testudo chilensis*. I do not profess to be specially acquainted with the *Testudinata*; but I must observe that, if this species be really new, Dr. Gray has chosen a most unfortunate name for it; for, as already above mentioned, the best authorities deny the existence in Chili of any animals of this order; and, as we know several other species in the present collection were imported from different parts of the South-American continent, it is, of course, obvious that the same may have been the case with the present animals. Now Duméril and Bibron (*Erpétologie Générale*, ii. p. 74) record the occurrence on the Rio Negro, in Northern Patagonia, of a species of Tortoise (*Testudo stellata*), to which the present animal, according to Dr. Gray, is very nearly allied; and Burmeister (*La Plata-Reise*, ii. p. 521) tells us that this *T. stellata* is common in the vicinity of Mendoza and all over the neighbouring pampas of the Argentine Republic. I have no doubt whatever, therefore, that the present Tortoises are from La Plata, and belong to the species called *Testudo stellata* by D'Orbigny and Burmeister. It is very probable that Dr. Gray may be right in separating the species from *T. stellata* of Africa; but it would have been better to have called it by some other name*.

* For further remarks on this Tortoise, see *Ann. Nat. Hist.* ser. 4, vol. vi. p. 470.

13. A Spider Monkey brought home from Trinidad, and presented to the Society by the Hon. Arthur Gordon, C.M.Z.S. and lately Governor of that colony, on the 14th of July. Mr. Gordon informs me, in reply to inquiries, that this Monkey was obtained for him by one of his correspondents from the upper part of the Caura River, a southern confluent of the Orinoco, and was considered to be a very rare species. I was inclined to refer it to *Ateles belzebuth* of Geoffroy St.-Hilaire (Ann. d. Mus. vii. p. 271), and have inserted it in the Register under this name. But the animal having unfortunately died, and having been sent to the British Museum, is, as I am informed, considered by Dr. Gray to be probably a female of his *Ateles bartlettii* (P. Z. S. 1867, p. 992, pl. XLVII.).

I do not think this is probable. I take Dr. Gray's *Ateles bartlettii* to be the same as *Ateles variegatus* of Wagner (Schreb. Suppl. i. p. 313, et Abh. Acad. Munich, v. p. 420), which was discovered by Johann Natterer on the Upper Rio Negro in 1831. Now Wagner's description of *A. variegatus* (which agrees exactly with *A. bartlettii*) was, as he informs us, taken from a female; so that in this species the sexes must be nearly alike*.

14. A young Hornbill, of a species closely allied to *Buceros cylindricus*, Temm.,—of which the bill only is figured in 'Planches Colorées' (Pl. Col. 521), but the bird itself is described by Hartlaub (Orn. Westafr. p. 162),—and to *B. fistulator*, Cassin.

As, however, it is not identical with either of these species, I subjoin a short diagnosis of it, which, together with the accompanying figure, taken from the living bird, will, I think, render it easily recognizable:—

BUCEROS SUBCYLINDRICUS, sp. nov. (Plate XXXIX.)

Niger cristatus: capitis plumis albescente cinereo variegatis; dorso postico, campterio alari et alarum dimidio apicali albis, remigibus tribus externis exceptis nigris: subtus niger; ventre imo, tibiis et crisso albis; cauda alba: rectricibus duabus intermediis totis, nisi ad ipsum apicem, et rectricum lateralium fascia lata basin versus nigris; rostro et pedibus nigris; rostri culmine elevato, valde compresso, cultrato, arcuato: iridibus rufis: long. tota 24, alæ 11.5, caudæ 10, rostri a rictu 4, poll. Angl. et dec.

Hab. Africa occidentalis.

Obs. A *B. cylindrico*, capite maculato et rectricibus mediis nigris, a *B. fistulatore* capite maculato et secundariis omnino albis distinguendus.

15. A rare Southern Asiatic Blindsnake (*Typhlops nigro-albus*, Dum. et Bibron; Günther, Ind. Rept. p. 172), purchased July 19th. The species was identified for us by Dr. Günther, to whom the Society is greatly indebted for the determination of the Reptiles in their living collection.

16. A second example of the new Kangaroo which I described

* Cf. Ann. Nat. Hist. ser. 4, vol. vi. p. 472.



J. G. Keulemans del.

M. & N. Hanhart imp.

BUCEROS SUBCYLINDRICUS

and figured at a recent Meeting of this Society as the Roan Kangaroo (*Macropus erubescens*, P. Z. S. 1870, p. 126, Pl. X.). The receipt of this animal, which is a male, like the former one, is of great interest, as confirming the validity of this fine species.

17. Two male Galeated Curassows (*Pauxi galeata*), brought to this country from the port of Santa Martha, New Granada, in company with a female of *Crax alberti*. This Curassow is very scarce in living collections, and appears not to have been exhibited in the Society's Menagerie since 1830.

18. A Lemur of a species quite new to the Society's collection, purchased July 29th. This animal died, unfortunately, soon after its arrival, and upon being taken to the British Museum for examination proved to be, in Dr. Gray's opinion, a large specimen of *Haplemur olivaceus*, I. Geoffr. Cat. de Mam. p. 75*.

19. A male specimen of the Ethiopian Ant-bear (*Orycteropus aethiopicus* of Sundevall). This animal has been placed in the Gardens in company with the Cape Ant-bear (*O. capensis*), received



Orycteropus aethiopicus.

18th June, 1869. The two animals, although both males, live sociably together, and enable a comparison to be made between the external appearances of these two disputed species. Duvernoy has already enlarged upon the differences between the skeletons of the

* Dr. Gray has, however, more recently described it as a new species (*Haplemur simus*), P. Z. S. Dec. 6, 1870.

two forms (Ann. Sci. Nat. ser. 3, vol. xx. p. 181); and, as will be allowed by every body, the comparison of the living specimens serves to confirm their distinctness. The chief noticeable differences in the living animals are the more hairy body, especially on the lower back and flanks, the shorter, thicker tail, and the shorter head and ears in the *O. capensis*. The insides of the nostrils at their openings are thickly covered with hair in *O. capensis*, which is not nearly so much the case in *O. æthiopicus*.

The total number of registered additions to the Society's Menagerie during the month of August 1870 was 179; of these, 5 were by birth, 37 by presentation, 49 by purchase, and 88 were received on deposit. The total number of departures during the same period, by death and removal, was 96. The most noticeable of the additions were:—

1. A Pluto Monkey (*Cercopithecus pluto*) from West Africa, purchased August 3rd. This is a scarce species which was described and figured by Dr. Gray in the Society's 'Proceedings' as long ago as 1848 (*cf.* P. Z. S. 1848, p. 56, Mamm. pl. III.). I am not aware that there has ever been a second living example in the Society's Menagerie. The Pluto Monkey is perhaps most closely allied to *C. albogularis*, Sykes.

2. Two Pheasants of a species allied to *Phasianus colchicus*, deposited by Mr. J. J. Stone on the 14th of August. These Pheasants had arrived from one of Mr. Stone's Chinese collectors in company with specimens of *Thaumalea amherstiae*, and were doubtless from the same locality—that is, from the slopes of the Yung-ling mountains beyond Ta-kien-leu, on the Chinese confines of Thibet. Mr. Elliot has lately described this species (Ann. Nat. Hist. ser. 4, vol. vi. p. 312), and proposed to call it *Phasianus elegans*.

3. Three Roseate Spoonbills (*Platalea ajaja*), purchased August 14th, being the first examples of this species ever received alive by the Society.

The total number of registered additions to the Society's Menagerie during the month of September 1870 was 76; of these, 4 were by birth, 53 by presentation, 10 by purchase, 3 by exchange, and 6 were received on deposit. The total number of departures during the same period, by death and removal was 133.

Amongst the additions the most remarkable were:—

1. A Red-necked Bustard (*Eupodotis ruficollis*), purchased September 1st, having been imported from Natal by Capt. A. Davis. This large Bustard has never been previously exhibited alive in the Society's Gardens.

2. Two female Dorsal Squirrels (*Sciurus dorsalis*, Gray), received from the Jardin d'Acclimatation of Paris on the 7th of September, and making with the two males already in the Society's Gardens two pairs of this beautiful Squirrel. *Sciurus dorsalis* was first described by Dr. Gray in the Society's 'Proceedings' in 1848, from specimens obtained by M. Sallé in Nicaragua (*cf.* P. Z. S. 1848, p. 148, Mamm.

pl. VII.). The locality there given by Dr. Gray is erroneously stated to be Caraccas. More recently several examples of this species have been brought to Europe, and shows that this Squirrel, like several of its congeners, is very variable in its colouring, some of them being nearly wholly rufous, whilst others are white except on the dorsal streak, as shown in Dr. Gray's figure (*cf.* Gray, Synopsis of American Squirrels, Ann. Nat. Hist. ser. 3, vol. xx. p. 422).

3. A pair of Daubenton's Curassows (*Crax daubentoni*, G. R. Gray), presented on the 29th of September by James Wright, Esq., having been received by that gentleman from Tucacas, a port in Northern Venezuela. This addition is of importance, as the species has not been previously received alive by the Society, and its exact locality was a little uncertain.

A seventh letter* on the Ornithology of Buenos Ayres, by Mr. W. H. Hudson, C.M.Z.S., was read:—

“Buenos Ayres, April 23, 1870.

“In my last letter I described the common Blackbird of this country (*Molothrus bonariensis*), but omitted some interesting particulars, which I now furnish. I have found it most common in the vicinity of Buenos Ayres city, becoming rarer the further we go from it. It is fond of cultivated districts, but is oftener met with in open plains than in woods. Its eggs are not often found in the nests of birds that breed in wild forests—never in the nests of the Cuckoos and Thrushes.

“I have never seen it attack any bird to get into its nest, and believe its eggs are invariably laid in the absence of the true proprietor. The Tijereta (*Milvulus violentus*), that constantly attacks and beats off birds of prey, would not be easily driven off by a female Blackbird; and yet the Tijereta is the most imposed upon of any; while, on the other hand, the Blackbird's eggs are never found in the nests of some species that are not at all pugnacious, such as that, for example, of *Serpophaga nigricans*.

“A very remarkable circumstance is that the eggs of the Blackbird differ as much in form, size, and colour as its habits are irregular. Some are perfectly round, others oval, pointed, or elliptical. The commonest colours are pure white with very small pink spots thinly distributed, and reddish white thickly covered with brownish-red spots, the form of the spots on those darkly mottled being on different eggs round, oblong, and irregular.

“Can it be possible that an imperfection of the sexual organs, producing this diversity in the eggs, causes also that looseness in its breeding-habits which makes this species so different from others? According to Wilson, the *Molothrus pecoris* of the United States of North America lays but one egg in a nest, and lays its eggs all alike. The idea is perhaps fanciful, but has occurred to me, that all the birds I am acquainted with that build elaborate ingenious nests lay eggs

* See Mr. Hudson's previous letters:—No. I., P. Z. S. 1870, p. 87; II., *ibid.* p. 112; III., *ibid.* p. 158; IV., *ibid.* p. 332; V. and VI., *ibid.* p. 545.

perfectly alike; while the eggs of *Molothrus badius*, as well as those of *M. bonariensis*, show great diversity in size, shape, and markings, and there is a corresponding irregularity in the breeding-habits of the birds. But I will say no more on this subject now, as I desire to give you a fuller account of the *Molothrus badius*.

“This bird is here called ‘*Ala-canela*,’ and by casual observers is frequently taken for the female of the *M. bonariensis*, resembling it much in size and colour; but it is a much prettier bird. It invariably goes in small flocks of about ten or fifteen individuals, and remains with us the whole year, but in the cold season travels about a great deal from place to place. It is fond of keeping about houses, if trees are near them, and is frequently seen clinging to and pecking fresh meat hung out of doors. Its language is varied; and it has different notes to call its companions, to express alarm, and when about to fly or sing. When flying it utters frequently a peculiarly long, loud, and melodious note, that may be heard half a mile off on still days. Its song is low, sweet, and varied; and all the individuals of the flock sing together.

“They have a pleasant habit in winter of gathering on the sunny side of a woodpen, outhouse, or other sheltered place, and singing often for an hour or more without ceasing.

“Few birds affect concealment and fear of man less than this species. It is seldom quiet, and never alone, sociability being its predominating trait. But in other species this quality, however strong, is during the breeding-season overcome by the more powerful attachment of the sexes; in the *Ala-canela*, as far as my observations extend, the first is almost, and often quite, as strong as the last; and this circumstance introduces no little confusion into its breeding-habits. It often happens that the flock does not break up in spring, and on such occasions they entertain a promiscuous sexual intercourse. Sometimes they pair and construct a nest of slender sticks lined with hair, rather high up in the smaller branches of a tree, and lay four or five mottled eggs. A pair of them will sometimes seize the nest of the Lerratero (*Anumbius acuticaudatus*), and either lay in it or build their own nest on the top of it.

“I once observed a pair of them incessantly fighting for several days with a couple of Lerrateros for the nest of the latter. After they had got possession of it, I found under the tree five dead half-fledged young Lerrateros, cast out by the merciless intruders: considering the narrow entrance and great depth of the nest, this could not have been an easy feat. Another time I observed a flock of eight or ten individuals take possession of a nest, and build one of their own on the top of it, though no larger than for a single pair. They appeared to live very amicably together; and after a few days I took fourteen eggs from the nest. The birds manifested great anxiety while I was in the tree; but the eggs were perfectly cold; probably more would have been laid. The erratic habits of this bird are very puzzling, and will, perhaps, afford a fertile theme to the pens of future naturalists.

“I once observed a pair of young *Ala-canelus* following a Yellow-

breast (*Leistes anticus*) from tree to tree clamouring for food; they were fed many times by their foster-mothers while I watched them.

“It is very probable that they occasionally deposit their eggs in the nests of other birds.

“I remain, very truly yours,
“WILLIAM H. HUDSON.”

A communication was read from Mr. W. Vincent Legge, F.Z.S., containing notes on a bird of the Malurine group inhabiting Ceylon. Mr. Legge stated that the bird had the generic character of *Prinia*, but appeared different from *P. socialis*, the only species given as inhabiting Ceylon. A full description of the bird, its nest, and eggs were appended. The nest was stated to be a loosely made and careless structure, very different from that of *P. socialis*.

A communication was read from Professor W. Peters, F.M.Z.S., entitled “Contributions to the Knowledge of *Pectinator*, a genus of Rodent Mammalia from Eastern Africa.” This memoir was based upon five specimens in spirits, one imperfect skeleton, and one skin of the *Pectinator spekii* obtained by Mr. W. Jesse, Zoologist to the Abyssinian Expedition, between Zoulla and Senafé. After describing the external characters, anatomy, and osteology of this animal, and discussing the opinions of preceding authorities, Dr. Peters arrived at the following conclusions on this subject:—

1. *Pectinator* differs from *Ctenodactylus* not only in the greater number of teeth and in its longer tail, but also in the different structure of the ears and of the skull.

2. The *Ctenodactyli* (*Ctenodactylus* and *Pectinator*) cannot be associated with the *Dipodes*, their affinity with the latter being not greater than that of the *Chinchillæ*, *Octodontes*, and *Echinomyes*.

3. They show in nearly every part of their structure their near relationship with the last-named groups, and deviate from them only in a very few points (the form of the hyoid bone, of the sacral and caudal vertebral column, of the development of the crest of the humerus and femur), in which, however, they do not show any inclination towards the *Dipodina*, but rather some affinity with the *Murina*.

4. They form a peculiar group of the *Hystricidæ*, as understood by Waterhouse, which in some points is more allied to the *Chinchillæ*, in other points to the *Octodontes*.

5. *Petromys* is not to be associated with the *Ctenodactyli*, but with the *Octodontes*.

This paper will be printed in full in the Society’s ‘Transactions.’

Prof. Newton, V.P., exhibited an example of the chick of the rare and remarkable wader *Anarhynchus frontalis*, Quoy and Gaimard, sent to him from New Zealand by Dr. Hector, F.R.S., who had

received it from Mr. Thomas H. Potts of Canterbury. The bird, though only a few days old, had its bill very distinctly bent to the right side, quite as much so in proportion to its size as the adult.



Bill of *Anarhynchus frontalis*, pullus. Natural size.

Prof. Newton remarked on the great increase in our amount of information respecting this very singular form within the last few years, chiefly owing to the pains taken in Europe by Mr. James Edmund Harting, F.Z.S. (*Ibis*, 1869, p. 304, pl. 8), and Dr. Hartlaub, F.M.Z.S. (*P. Z. S.* 1869, p. 433)—but most of all to the investigations in New Zealand carried on by Mr. Potts, who had had ample opportunities of studying the habits of the bird, and had contributed an interesting note respecting them to the ‘Transactions and Proceedings of the New-Zealand Institute’ (vol. ii. pp. 68, 69), besides a fuller account read before the Wellington Philosophical Society on the 25th of June last, which would, no doubt, appear in the same journal in due time. Of this last a copy had been obligingly sent to Prof. Newton by Dr. Hector.

The Secretary read a paper by Mr. W. Theobald, of the Geological Survey of India, containing “Observations on a Paper by Dr. J. E. Gray, entitled ‘Notes on the Families and Genera of Tortoises’ &c.,” which had been communicated to the Society by Mr. W. T. Blanford, C.M.Z.S.

After some preliminary observations, in the course of which it was stated that the author’s personal acquaintance with some of the specimens referred to in Dr. Gray’s paper might be held to qualify him to make critical remarks on the subject, Mr. Theobald proceeded to treat of certain species of Tortoises mentioned in Dr. Gray’s paper (*P. Z. S.* 1869, p. 165 *et seq.*) in the following order:—

1. TESTUDO INDICA (Gray, *l. c.* p. 168).

As regards this species, Mr. Theobald insisted that it was time that the error which, in his opinion, was conveyed by the trivial name *indica* as applied to this species should be abandoned in scientific works, since not a single species of the group containing *T. indica* (if the aberrant *T. phayrei*, Blyth, be excepted) was known to occur either in India proper or in Burmah.

2. TESTUDO (SCAPIA) FALCONERI (Gray, *l. c.* p. 169).

This species, Mr. Theobald observed, had been based by Dr. Gray upon a skull “received in Dr. Falconer’s collection and presented to the British Museum by his brother on his death.” The locality “India” given by Dr. Gray, Mr. Theobald considered must be incorrect, as the only species of *Testudo* inhabiting India proper was

T. stellata, of which *T. megalopus*, Blyth, was a synonym (*vide* J. A. S. B. xxxii. p. 83). In Burmah two other species occurred, *T. elongata*, Blyth, and *T. platynotus*, Blyth. The latter species was closely allied to *T. stellata* of India, and replaced it throughout the countries east of the Bay of Bengal. The third species of *Testudo* from Burmah was *T. phayrei*, Blyth (J. A. S. B. xxii. p. 639), of which Mr. Theobald considered *T. falconeri*, Gray, to be a mere synonym. An excellent description of this species had been given by Blyth (*l. c.*), founded on two stuffed specimens presented by Captain Phayre, the largest of which measured 20 inches in a straight line, or $22\frac{1}{2}$ over the curve, the second specimen being slightly smaller, though more aged. In his 'Catalogue of the Reptiles in the Museum of the Asiatic Society of Bengal' Mr. Theobald had entered inadvertently the larger or type specimen of *T. phayrei* as "*T. indica*," whilst the smaller specimen (which was in a very dilapidated state) had been entered as *Manouria emys*. Both these mistakes Mr. Theobald attributed to his own culpable haste, as the type was easily recognizable, and had been at once detected by Dr. Anderson, the present curator. However, it required only a glance to see that Dr. Günther had erred in uniting *T. phayrei*, Blyth, with *Manouria*, inasmuch as, though *T. phayrei* possessed a divided caudal plate, yet its pectoral shields united to form a suture, as in true *Testudo*, and bore no resemblance to those plates in *Manouria*. The smaller and more aged specimen above alluded to had been originally stuffed, but when examined by Mr. Theobald was found to be in a very fragmentary condition. On inquiries being made how it had come into this state, Mr. Theobald had been informed that the specimen in question had been taken away by Dr. Falconer (when engaged in preparing his Catalogue of the Asiatic Society's Sewalik fossils) and buried, in order to separate the bones. The dermal plates were now consequently entirely separated from the skeleton, most of them, together with the skull and most of the limb-bones, being missing. The skeleton itself bore the names of the different bones written upon them in ink either by Dr. Falconer himself or by Dr. Walker, who had assisted him in the preparation of the above-named catalogue. As the skull in question had not, as it seemed, ever been restored to the Indian Museum through the inadvertence of Dr. Falconer when returning the rest of the specimen, it was but reasonable to conclude that it had remained in his possession, and had eventually thus passed into the British Museum. In default, therefore, of more exact information, Mr. Theobald held that the evidence before him pointed to the conclusion that the skull whereon *T. falconeri*, Gray, had been based was no other than the identical skull of *T. phayrei*, Blyth, missing from the Calcutta Museum.

3. TESTUDO ELONGATA, Blyth (Gray, *l. c.* p. 171).

This was the type of Dr. Gray's genus *Peltastes*, a name, as Dr. Stoliczka had pointed out to Mr. Theobald, preoccupied by Rossi in 1807 for a Hymenopteron, by Agassiz in 1838 for an Echino-

derm, and by Fischer in 1839 for an Orthopteron. The habitat of this species was given by Dr. Gray as "India," but should stand "from Arakan to Mergui" as already stated by Blyth (J. A. S. B. xxxii. p. 83).

4. *CYCLEMYS ORBICULATA* (Gray, *l. c.* p. 178).

Mr. Theobald repeated the observations made by him with regard to the synonymy and sternal suture of this species in Journ. Linn. Soc. Zool. vol. x. p. 12, 1869.

5. *KACHUGA PEGUENSIS* (Gray, *l. c.* p. 200).

The habitat of this species was given by Dr. Gray as "India;" but the specimen had probably come from Pegu. Mr. Theobald, however, could confidently say that he had brought home no heads of Tortoises from Pegu of which the "thorax" was "unknown;" and his impression was that this species had been founded on a skull (possibly aberrant) of either *Tetraonyx lessoni* or *Batagur trivittata*.

6. "KACHUGA TRILINEATA, Theobald" (Gray, *l. c.* p. 209).

Mr. Theobald denied that he had either named, described, or so much as admitted any *Kachuga trilineata*. The habitat was said to be "India;" but Mr. Theobald had brought home no skull of a three-streaked *Emys* from India, though he had brought some from Pegu. In 1867 Mr. Theobald had brought home specimens of two species of three-streaked *Emydes*, and had exhibited them to Dr. Gray at the British Museum. These were, according to Mr. Theobald's identification, *Emys duvaucelii*, Dum. & Bibr., from the Gauges, and *E. trivittata*, Dum. & Bibr., from the Irrawaddy; of the latter he had brought home many skulls, including that of a fine female now in the British Museum. This skull differed greatly from that of the male, which was a smaller and more finely coloured animal, and would therefore probably prove to be that upon which the species called *Kachuga trilineata* by Dr. Gray had been established.

7. *KACHUGA OLDHAMI* (Gray, *l. c.* p. 200).

This species, from Pegu, Mr. Theobald considered to be likewise very doubtful, being based on a skull only, upon the distinctness of which Mr. Theobald had no confidence whatever.

8. *KACHUGA BERDMOREI*, Blyth (Gray, *l. c.* p. 204).

Dr. Gray had rightly admitted this species (which had been wrongly identified by Dr. Günther with the very distinct *E. ocellata*, Dum. & Bibr.), but had left the habitat unknown, although it had not only been given by its describer, Mr. Blyth (J. A. S. B. xxvii. p. 281), but likewise by the author in his 'Catalogue of the Reptiles of Pegu' (p. 12), and although there were specimens of it in the British Museum both from Pegu and the Tenasserim provinces, where it was abundant. *E. ocellata*, of which Mr. Theobald believed there was no specimen in the British Museum, was strictly confined to the region of the Ganges, just as *E. berd-*

morei was to that of the Irrawaddy. The author finally repeated the statements, as regards the synonymy of this species, which he had published already in Journ. Linn. Soc. Zool. vol. x. p. 16, and in his Catalogue before referred to.

The following papers were read :—

1. On the Fishes of the Andaman Islands.

By FRANCIS DAY, F.Z.S. & F.L.S.

Having been directed by the Government of India to examine into and report upon the capabilities of the fisheries of the Andaman Islands, I propose detailing in the following paper the result of my investigations into the ichthyology of that penal settlement*.

These rocky islands are surrounded to a great extent by coral reefs, whilst the waters are beautifully clear, except during the stormy months of the year. The inquirer is consequently enabled with the greatest facility to perceive, even at considerable depths, the movements of the fishes, crustaceans, and other animals which inhabit those regions. Due most probably to this clearness of the water, the coloration of the fish is much more vivid than along the coasts of India ; and other curious results appear to be consequent on the same cause.

Siluroids are very rare ; the feelers useful in muddy waters do not appear to be here required ; in fact, the only situations where they were at all common were up creeks and in brackish pieces of water. Sea-snakes seemed to be entirely absent.

In those inland portions of the islands investigated by us, the freshwater streams (except during the rainy seasons) are insignificant, whilst large natural tanks are unknown. The aborigines, however, assert that a fine freshwater lake exists a few days' journey inland in the South Andamans. As might be anticipated, the varieties of freshwater fishes are few.

The period of the year I was at the Andamans was from December 29th, 1869, to January 24th, 1870, during which brief stay I received every assistance from the officials in procuring all the various species of fish which could be captured. I likewise went for eight days' fishing with the aborigines, when I was accompanied by Mr. Homfray, their energetic protector, and was fortunate in procuring many species at this time which I did not otherwise obtain.

Even during my brief sojourn, I observed the apparent migration of one species of fish, the beautiful *Acanthurus lineatus*, Linn., which was abundant on my arrival, but could not be obtained at the period I left.

I have included a few species obtained at the Nicobars by a native collector, who was kindly lent to me for that purpose by Dr. Stoliczka.

* For an account of the aborigines of the Andamans, see the author's article, Trans. As. Soc. Beng. 1870.

Family PERCIDÆ.

1. LATES CALCARIFER, Bloch.
- Jo-dah*
- , Andamanese.

Cæc. pyl. 3.

This species was apparently rare.

2. SERRANUS HEXAGONATUS, Forst.

Cæc. pyl. 32.

Common, and takes a bait very freely.

3. SERRANUS SUMMANA, Forsk.

A common species.

4. SERRANUS BONTOO, C. & V.
- Rou-je-dah*
- , Andamanese.

Common, one specimen 24 inches long.

5. SERRANUS ARGUS, Schn.

Cæc. pyl. 8.

Usually found with the *S. hexagonatus*, and taken in the same way.

6. SERRANUS SUILLUS, C. & V.
- Rāb-na-dāh*
- , or
- O-ro-tam-dah*
- , And.

Comparatively rare.

7. SERRANUS DISPAR, Playfair.

Very common.

8. SERRANUS GLAUCUS, sp. nov.

B. vii. D. 11/15. P. 17. V. 1/5. A. 3/8. C. 19. Cæc. pyl. 13-14.

Length of head $\frac{2}{7}$, of caudal $\frac{2}{11}$, height of body $\frac{1}{3}$ of the total length.*Eyes.* Diameter $\frac{1}{4}$ of length of head, $1\frac{1}{4}$ diameter from end of snout, 1 diameter apart.*Preopercle* serrated, having three strong denticulations at its angle.*Teeth* villiform in jaws, vomer, and palate, with one or two canines on either side of the upper jaw.*Fins.* Third dorsal spine rather the longest; second anal spine strongest, third slightly the longest; caudal lunated.*Colours* greyish, becoming dirty white along the abdomen. Head and body rather closely covered with large yellow spots. Pectoral, dorsal, anal, and caudal also spotted. Dorsal, ventral, anal, and caudal with a black margin edged with white.*Hab.* Andamans, where it is not uncommon.

9. SERRANUS HOMFRAYI, sp. nov.

B. vii. D. 9/14. P. 17. V. 1/5. A. 3/9. C. 15.

Length of head $\frac{1}{3}$, of caudal $\frac{2}{9}$, height of body $\frac{1}{3}$ of the total length.

Eyes. Diameter nearly $\frac{1}{4}$ of length of head, 1 diameter from end of snout.

Angle of preopercle slightly rounded and finely serrated.

Teeth villiform, canines small.

Fins. Last dorsal spine longest. The pectoral reaches to above the commencement of the anal. The second anal spine the longest, and much the strongest.

Colours. Whitish, and covered with roseate spots, well defined upon the head, and a few dark ones also along its upper surface. A moderately broad black band over the free portion of the tail, just behind the posterior margin of the dorsal fin, and extending laterally to one-third of its depth. Dorsal and anal fins spotted with red, having a broad margin of the same scarlet colour, edged with white. Caudal with more red than the dorsal or anal, and a very dark margin along its upper portion.

Hab. Port Blair. One specimen obtained, 6 inches in length.

I have named it after J. Homfray, Esq., of the Andamans, who greatly assisted me in my inquiries.

10. SERRANUS CYANOSTIGMATOIDES, Blkr.

Cæc. pyl. 16.

11. GRAMMISTES ORIENTALIS, Bl. Schn.

12. GENYOROGÉ MARGINATA, C. & V.

13. GENYOROGÉ CÆRULEOPUNCTATA, C. & V.

14. GENYOROGÉ AMBOINENSIS, Bleeker.

B. vii. D. 11/13. P. 17. V. 1/5. A. 3/8. C. 17. L. l. ca. 70.
Cæc. pyl. 0.

The black lateral blotch in this species at the Andamans is a *post-mortem* appearance.

15. GENYOROGÉ GRAMMICA, sp. nov.

B. vii. D. 10/14. P. 17. V. 1/5. A. 3/7. C. 17. L. l. 45.
Cæc. pyl. v.

Length of head $\frac{4}{13}$, of caudal $\frac{1}{5}$, height of body $\frac{1}{3}$ of the total length.

Eyes. Diameter $\frac{2}{7}$ of length of head, $1\frac{1}{2}$ diameter from end of snout, 1 diameter apart.

Preopercle with a deep emargination, serrated on both vertical and horizontal margins, the latter being the coarsest. Interopercular knob well developed.

Teeth villiform, with very small canines in the upper jaw.

Fins. Dorsal spines moderately strong, the third to the sixth being the longest. Pectoral pointed, reaching to above the front margin of the anal. Second anal spine longest and strongest, its length nearly equalling that of the rays. Caudal lunated.

Colours. Yellow, with five blue lines on the body, the three upper going to the dorsal fin, the fourth to the middle of the caudal, and

the fifth to the end of the base of the anal. Four blue lines on the head: two from the eye join second and third body-lines; two from the snout become fourth and fifth on the body. A black finger-mark exists on and above the lateral line, opposite the commencement of the soft dorsal fin.

Hab. Andaman Islands, where it is not rare.

16. MESOPRION RUSSELLII, Blkr.

Cæc. pyl. 4-6.

17. MESOPRION DECUSSATUS, C. & V. *Jeu-win-dah*, And.

Cæc. pyl. 3.

This is identical with the species I described as *M. therapon*, as pointed out to me by Dr. Günther.

18. MESOPRION BLEEKERI, Günther.

19. MESOPRION RANGUS, C. & V. *To-go-re-dah*, And.

20. MESOPRION CHIRTAH, C. & V. *An-na-kah-ro-dah*, And.

Many of the young (*M. annularis*) were captured, and a few adults (*M. chirtah*).

21. MESOPRION SILLA00, C. & V.

22. MESOPRION JOHNI, C. & V.

23. MESOPRION MULTIDENS, sp. nov.

B. vii. D. 10/11. P. 16. V. 1/5. A. 3/9. C. 15. L. 1. 52.
L. tr. 7/17. Cæc. pyl. 5.

Length of head $\frac{2}{7}$, of caudal $\frac{1}{4}$, height of body $\frac{1}{4}$ of the total length.

Eyes. Diameter nearly $\frac{1}{3}$ of length of head, 1 diameter from end of snout, $1\frac{1}{4}$ diameter apart.

The distance between the eye and the angle of the mouth equals that of three-fourths of the diameter of the orbit. Seven rows of scales exist between the eye and the angle of the preopercle, which is serrated along both vertical and horizontal margins. Preorbital two-thirds as high as the orbit. Maxilla reaches to below the anterior margin of the orbit.

Teeth. Six canines in the lower jaw, two large and some smaller ones in the upper jaw; villiform on vomer and palate.

Fins. Dorsal spines slender, the fifth the longest, and nearly one-half as long as the height of the body below it. Pectoral reaching to above the posterior margin of the base of the anal. Last dorsal and anal rays elongated. Ventral spine two-thirds as long as the first ray. Caudal deeply forked. Second anal spine strongest, third the longest.

Colours. Rosy, with about six longitudinal yellow bands along the body, and one golden one from the anterior inferior angle of the eye to the snout, and another across the forehead.

Hab. Andamans, where it is common, growing to a large size, and being highly esteemed as food.

24. *AMBASSIS UROTÆNIA*, Blkr.

L. l. 26. L. tr. 4/10.

Found at the Andamans and Nicobars.

25. *AMBASSIS DUSSUMIERI*, C. & V.

Taken in salt water.

26. *AMBASSIS MACRACANTHUS*, Blkr.D. $7\frac{1}{9}$. V. 1/5. A. 3/9. L. l. 27.Length of head $\frac{2}{7}$, of caudal $\frac{2}{7}$, height of body $\frac{1}{5}$ of the total length.

Eyes. Diameter $\frac{1}{5}$ of length of head, $\frac{1}{3}$ of a diameter from end of snout. Anterior margin of orbit serrated, two spines at its posterior superior angle; preorbital serrated. A double serrature at the preopercle. Subopercle with four teeth at its angle. The maxilla extends to below the anterior third of the orbit.

Teeth villiform.

Fins. Second dorsal spine one-half the length of the body; third anal spine the longest in that fin.

Lateral line ceases after a few scales.

Colours. Silvery, without any lateral stripe, except in preserved specimens. Second dorsal spine of a brilliant orange, the interspace between it and the third black.

Hab. Andamans, in the estuaries.27. *APOGON MULTITÆNIATUS*, Blkr.D. $6\frac{1}{9}$. P. 15. V. 1/5. A. 2/8. C. 17. L. l. 28. L. tr. $2\frac{1}{2}/7\frac{1}{2}$.Length of head $\frac{1}{3}$, of caudal $\frac{1}{4}$, height of body above $\frac{1}{4}$ of the total length.

Eyes. Diameter $\frac{2}{7}$ of length of head, 1 diameter from end of snout, $\frac{3}{4}$ of a diameter apart.

Lower limb of preopercle crenulated.

Teeth large and widely set; also villiform on vomer and palate.

Fins. Second dorsal spine not $\frac{1}{3}$ of height of body below it. Caudal forked.

Colours. Greyish, with nine dark brown longitudinal bands, three times as wide as the ground-colour, extending from the head nearly to the tail, which has a dark spot at its base. First dorsal black. Ventral nearly black, other fins red. Dorsal, caudal, and anal with dark margins.

28. *APOGON HYALOSOMA*, Blkr.D. $6\frac{1}{9}$. P. 15. V. 1/5. A. 2/8. C. 17. L. l. 24. L. tr. $2\frac{1}{2}/8\frac{1}{2}$.

Very common. Specimens captured up to 6 inches in length.

29. *APOGON ORBICULARIS*, Kuhl & V. Hasselt.D. $6\frac{1}{8}$. P. 12. V. 1/5. A. 2/9. C. 17. L. l. 25. L. tr. 3/7.*Colours.* Olive; a dark zone round the body in front of the first

dorsal fin. Head spotted with black. A cloudy band below the second dorsal. Free portion of tail, anterior to the base of the fin, spotted. First dorsal spotted with black; base of second dorsal cloudy. Ventrals nearly black.

30. *APOGON FASCIATUS*, White.

Andamans and Nicobars.

31. *APOGON CHRYSOTÆNIA*, Blkr.?

D. $7\frac{1}{9}$. P. 17. V. $1\frac{1}{5}$. A. $2\frac{1}{8}$. C. 17. L. 1. 26. L. tr. $6\frac{1}{8}$.

Length of head $\frac{2}{7}$, of caudal $\frac{2}{9}$, height of body $\frac{2}{7}$ of the total length.

Eyes. Diameter $\frac{2}{5}$ of length of head, $\frac{1}{2}$ a diameter from end of snout.

Third dorsal spine longest.

Colours. Brilliant golden, with a black head. A silvery-white median band exists along the top of the head, which divides, one branch proceeding along the back on either side to the upper half of the tail; a second goes from above the orbit to the middle of the tail, a third through the orbit to the lower half of the tail, and a fourth from the angle of the mouth to below the base of the pectoral. Fins orange.

This fish is very common amongst the coral-reefs on the Andaman Islands. As soon as the water is splashed they all rush to the coral, concealing themselves amongst its sticks, probably afraid that a large fish is coming to devour them. It is also found at the Nicobars.

32. *APOGONICHTHYS AURITUS*, C. & V.

B. vii. D. $7\frac{1}{9}$. A. $2\frac{1}{7}$. L. 1. 23.

Length of head $\frac{1}{3}$, of caudal $\frac{2}{9}$, height of body $\frac{1}{3}$ of the total length.

Eyes. Diameter $\frac{2}{7}$ of length of head, $\frac{1}{2}$ a diameter from end of snout.

Opercles entire. Maxilla reaches to slightly behind the posterior margin of the orbit.

Teeth villiform on jaws, vomer, and palate.

Fins. Caudal rounded. Third dorsal spine the longest. Lateral line ceases under the middle of the soft dorsal fin.

Colours. Body and head spotted and marbled all over with brown. A round black spot on the opercles having a white lower edging.

Hab. Andamans and Nicobars.

33. *CHEILODIPTERUS QUINQUELINEATUS*, C. & V.

D. $6\frac{1}{9}$. P. 15. V. $1\frac{1}{5}$. A. $2\frac{1}{9}$. L. 1. 25.

Colours. Five black bands along the sides. A black spot at the root of the caudal, with a bright yellow ocellus around it.

Hab. Nicobars.

34. *DULES TÆNIURUS*, C. & V.

Family PRISTIPOMATIDÆ.

35. THERAPON SERVUS, Bloch.

36. THERAPON THERAPS, Cuv. & Val.

37. PRISTIPOMA HASTA, Bl. *Oo-rug-nud-dah*, or *Koor-koo-to-dah*, And.38. PRISTIPOMA MACULATUM, Bl. *Oor-ung-dah*, And.

39. PRISTIPOMA ARGYREUM, Cuv. & Val.

D. 12/13. V. 1/5. A. 3/7. L. 1. 45.

Length of head $\frac{1}{3}$, of caudal $\frac{2}{5}$, height of body $\frac{1}{3}$ of the total length.*Eyes.* Diameter $\frac{1}{3}$ of length of head, $\frac{1}{2}$ a diameter from end of snout.

Angle of preopercle slightly produced, and more coarsely serrated than the other portion.

Fins. Third dorsal spine longest, being $\frac{2}{3}$ of height of body. Second anal spine strong, its length equal to that of the first ray. Caudal cut square.*Colours.* Silvery; a dark blotch on opercle. Membrane of first dorsal fin darkish.

40. DIAGRAMMA NIGRUM, Cuv. & Val.

41. DIAGRAMMA PUNCTATUM, Cuv. & Val.

B. vi. D. 9/25. P. 17. V. 1/5. A. 3/7. C. 17. L. 1. 65.

In examining the Andamanese with the Red-Sea specimen in the British Museum, the differences were but slight.

42. LOBOTES SURINAMENSIS, Bl. *Bur-dā-lah*, or *Ar-aig-dah*, And.

Cæc. pyl. 4.

Not common.

43. SCOLOPSIS CILIATUS, Lacép.

Cæc. pyl. 5.

Colours. Greenish olive, becoming lighter on the abdomen. A silvery-white line extends from between the lateral line to the commencement of the soft dorsal. Scales below the lateral line have a golden central spot. Fins reddish.Three specimens up to $7\frac{1}{2}$ inches in length.

44. SCOLOPSIS BILINEATUS, Bl.

B. v. D. 10/9. P. 17. V. 1/5. A. 3/7. C. 17. L. 1. 46.
L. tr. 4/15. Cæc. pyl. 5.

45. SCOLOPSIS CANCELLATUS, Cuv. & Val.

The foregoing three species of this genus took a bait very readily.

46. *DENTEX (SYNAGRIS) NOTATUS*, sp. nov.

D. 10/9. P. 15. V. 1/5. A. 3/7. C. 17. L. 1. 48. L. tr. 3/10.

Length of head above $\frac{1}{4}$, of caudal above $\frac{1}{5}$, height of body above $\frac{1}{4}$ of the total length.*Eyes.* Diameter $\frac{2}{7}$ of the length of head, 1 diameter from the end of snout and apart.

Preopercle crenulated. Three rows of scales on the cheeks; lower limb of preopercle scaleless. Preorbital higher than the eye.

Teeth. Four canines in the upper, and six in the lower jaw.*Fins.* Fifth and sixth dorsal spines the longest, and nearly one-third as long as the head. Third anal spine longest, and intermediate in length between the second and the first ray. Caudal forked, upper lobe the longest, the fin covered with small scales.*Colours.* Rosy, with a dark brilliant spot on the first five scales below the lateral line, the upper half red, the lower bright yellow. Five or six yellow longitudinal bands below the lateral line, and three silvery-white ones. A broad purplish band below the eye leading to the shoulder-mark. A yellow band along the base of the dorsal and anal fins.*Hab.* Andamans. Only one specimen captured.

Family SCIÆNIDÆ.

47. *CORVINA BELENGERI*, Cuv. & Val.48. *OTOLITHUS ANEUS*, Bloch. *Chal-burn-dah*, And.

Family SPARIDÆ.

49. *LETHRINUS HARAK*, Forsk. *Po-tang-dah*, And.

Several specimens were obtained by the Andamanese, who shot them with their arrows.

50. *LETHRINUS XANTHOTÆNIA*, Blkr.51. *CHRYSOPHRYS CALAMARA*, C. & V. *Moo-roo-kee-dah*, And.52. *PIMELEPTERUS CINERASCENS*, Forsk.

Common.

Family POLYNEMIDÆ.

53. *POLYNEMUS TETRADACTYLUS*, Shaw. *To-bro-dah*, And.

Not common.

Family MULLIDÆ.

54. *UPENEUS BARBERINUS*, Lacép.

Common.

55. *UPENEUS SPILURUS*, Bleeker.*Eyes.* Diameter $\frac{1}{6}$ of length of head, $3\frac{1}{2}$ diameters from end of snout. Interorbital space convex.*Scales* ctenoid.

56. *UPENEUS INDICUS*, Shaw.

57. *UPENEOIDES TRAGULA*, Richardson.

Cæc. pyl. 6.

Barbels of a brilliant orange-colour. A dark streak along the sides, which are spotted. Both caudal lobes barred.

58. *UPENEOIDES BIVITTATUS*, C. & V. *Chah-ti-ing-ud-dah*, And.

59. *MULLOIDES FLAVOLINEATUS*, Lacép.

Family NANDIDÆ.

60. *PLESIOPS CORALLICOLA*, Bleeker.

Colours brownish, each scale with a blue centre. Opercles with a large black ocellus.

Andamans and Nicobars.

Family ATHERINIDÆ.

61. *ATHERINA FORSKÅLII*, C. & V. *Ko-re-dah*, And.

Very numerous.

Family MUGILIDÆ.

62. *MUGIL MACROCHILUS*, Blkr.

The Andamanese procured large numbers of these Mulletts, shooting them with bows and arrows. They are more esteemed as food than any other description of fish.

63. *MUGIL WAIGIENSIS*, C. & V. *Do-dah*, And.

Not uncommon.

64. *MUGIL BONTAH*, Cuv. & Val. *Pa-lă-ke-dah*, And.

Seven long cæcal appendages.

65. *MUGIL SUNDANENSIS*, Q. & G.

66. *MUGIL CÆRULEO-MACULATUS?*, Bleeker.

These specimens agree with Bleeker's description, except that the pectoral fin is not quite so long as the head, instead of being somewhat longer.

Family TRACHINIDÆ*.

67. *PERCIS HEXOPHTHALMA*, Ehrn.

D. 5/21. P. 17. V. 1/5. A. 17. C. 15. L. l. 62. L. tr. 8/21.
Cæc. pyl. 3.

A beautiful specimen, 8 inches long, was taken at Port Blair.

* A specimen apparently of the *Pseudoplesiops typus*, Bleeker, placed by myself in the British Museum, differs from the original description, its ventrals being thoracic and not jugular.

68. SILLAGO SIHAMA, Forsk. *Thol-o-dah*, And.
Cæc. pyl. 4.

69. PSEUDOCROMIS XANTHOCHIR, Bleeker.
L. l. 45.

Family CIRRHITIDÆ.

70. CIRRHITES FORSTERI, Bl. Schn.
Only one specimen was captured.

Family SCORPÆNIDÆ.

71. PTEROIS VOLITANS, Linn. *Cheeb-ta-ta-dah*, And.

This fish is much dreaded, on account of the severe nature of the wounds inflicted by its spines.

Family COTTIDÆ.

72. APISTUS (PROSOPODASYS) NIGER, C. & V. *Pom-tho-cho-rogue-dah*, And.

Wounds from the spines of this fish are likewise greatly feared.

73. PLATYCEPHALUS NEGLECTUS, Trösc.

74. PLATYCEPHALUS INSIDIATOR, Forsk. *A-ra-wud-dah*, or *Chou-ur-dah*, And.

Family BERYCIDÆ.

75. HOLOCENTRUM ANDAMANENSE, sp. nov.

B. viii. D. 11/14. P. 17. V. 1/7. A. 4/9. C. 21. L. l. 42.
L. tr. $3/7\frac{1}{2}$.

Length of head nearly $\frac{1}{3}$ ($\frac{4}{13}$), of caudal $\frac{1}{5}$, height of body nearly $\frac{1}{3}$ ($\frac{4}{13}$) of the total length.

Eyes. Diameter $\frac{2}{7}$ of length of head, 1 diameter from end of snout, $\frac{3}{4}$ of a diameter apart.

Jaws of equal length, vertical and horizontal margins of preopercle rather finely serrated, having a long smooth spine at the angle, the length of which equals that of the diameter of the eye. Opercle with two flat spines, the upper being the longest, and twenty-nine denticulations below; sub- and interopercles serrated. Preorbital with a strong spine descending downwards. Posterior process of intermaxillaries extends backwards to opposite the anterior third of the orbit; the maxilla extends to below the same spot. Shoulder-scale serrated.

Teeth villiform.

Fins. The third to the fifth dorsal spines the longest. Ventrals do not reach nearly to the anus. Third anal spine long and strong, equalling one-sixth of the total length. Caudal forked, lobes of equal extent.

Scales serrated posteriorly, and holes like pin-marks all over them.

Colours. Uniform rosy scarlet.

Length of specimen 8 inches.

Hab. Port Blair.

Family SQUAMIPINNES*.

76. CHÆTODON VAGABUNDUS, Linn. *Pah-noo-dah*, And.

77. CHÆTODON PICTUS, Forsk.

78. CHÆTODON PLEBEJUS, Gmel.

D. 14/17. A. 4/16. L. 1. 50.

Colours. Yellow. Ocular band black, with a white edge. Ocellus at base of caudal black, with a white margin.

79. CHÆTODON DIZOSTER, C. & V.

This species was from the Nicobars.

80. HENIOCHUS MACROLEPIDOTUS, C. & V. *Pah-no-dah*, And.

81. SCATOPHAGUS ARGUS, Linn. *Po-ra-dah*, And.

Cæc. pylori 18.

82. EPHIPPUS ORBIS, Bl. *Kol-lid-dah*, And.

Cæc. pylori 4.

83. DREPANE PUNCTATA, Linn. *Gun-na-to-dah*, And.

84. TOXOTES JACULATOR, Pall. *Chá-ra-wud-dah*, And.

One specimen was 9 inches in length.

Family TEUTHIDÆ.

85. TEUTHIS VIRGATA, C. & V. *Tah-meer-dah*, And.

D. 13/10. P. 15. A. 7/9. C. 17.

Colours. Upper two-thirds of body coppery yellow, covered with

* I obtained some specimens at Madras, $1\frac{1}{10}$ inch long, of a fish which appears to me to belong to the genus termed *Tholichthys* by Dr. Günther, but which seems to be the young form of a genus of this family. I have placed one, however, in the British Museum as *T. osseus*.

D. 12/25. P. 15. V. 1/5. A. 3/19. C. 17. L. 1. 41.

Length of head nearly $\frac{1}{3}$, of caudal $\frac{1}{5}$, height of body $\frac{1}{2}$ of the total length.

Eyes. Diameter $\frac{1}{2}$ of length of head, 1 diameter apart.

Mouth small. Suprascapular considerably dilated; preopercular angle enlarged, reaching to the ventral fin. Suborbital ring enlarged, descending as low as the gill-opening, and its lower edge with five denticulations.

Lateral line ceases opposite to the middle of the soft dorsal.

Scales ctenoid, none on the head.

Fins. Dorsal notched, third spine the longest. Second anal spine longest and strongest. Ventrals rounded. Caudal cut square.

I cannot resist considering this to be one of the *Squamipinnes*, probably a young *Chaetodon* or *Holocanthus*, and, I believe, a *Tholichthys* of a more adult age than Dr. Günther's types.

round blue spots, and having blue lines on the head. A brown band as wide as the orbit extends from before the dorsal fin, through the eye, to below the jaws, a second from sixth and seventh spines to base of pectoral fin, whilst both are edged with blue. Fins yellowish.

86. *TEUTHIS VERMICULATA*, C. & V. *Chow-lud-dah*, And.

87. *TEUTHIS CONCATENATA*, C. & V. *Thar-oar-dah*, And.

Colours. Dark greyish brown, covered all over with light orange spots larger than the interspaces, but decreasing in size towards the abdomen. A blue band extends from below the orbit to the angle of the mouth, whilst another passes along the preopercle.

88. *TEUTHIS MARMORATA*, Q. & G.

89. *TEUTHIS JAVA*, Linn. *Thar-oar-dah*, And.

90. *TEUTHIS LABYRINTHOIDES*, Bleeker.

91. *TEUTHIS ALBOPUNCTATA*, Schleg.?

The spots in this species were blue.

Family ACRONURIDÆ.

92. *ACANTHURUS CTENODON*, Cuv. & Val.

D. 8/29. A. 3/26.

Colours. Lineated all over with blue and yellow lines, the latter somewhat the widest. Numerous red spots about the head, more especially around the eyes. Dorsal and anal fins lineated.

Several specimens taken up to 8 inches in length.

93. *ACANTHURUS TRIOSTEGUS*, Linn.

Many specimens obtained up to 5½ inches.

94. *ACANTHURUS LINEATUS*, Linn.

The coloration in Bennet's 'Fishes of Ceylon' very correctly represents this species, of which many were taken up to 10 inches in length.

95. *ACANTHURUS ANNULARIS*, Cuv. & Val.

Large specimens of this fish were obtained, which induces me to believe that Cuvier was correct in considering it a distinct species, and not the young of *A. java*, which latter form was not taken.

Family CARANGIDÆ.

96. *CARANX HIPPOS*, Linn.

An apparent variety of this species was covered with scattered black spots over the upper half of its body and its sides.

97. *CARANX MELAMPYGUS*, Cuv. & Val.

98. *CARANX BLOCHII*, Cuv. & Val.

99. *CARANX CALLA*, Cuv. & Val.

100. *CARANX DJEDDABA*, Forsk.

101. *CARANX MATE*, Cuv. & Val.

Colours. Deep slate-colour, silvery below. A well-defined opercular spot. Axil not black.

102. *CARANX COMPRESSUS*, sp. nov.

D. $8\frac{1}{22}$. P. 21. V. $1\frac{1}{5}$. A. $2\frac{1}{19}$. C. 21. L. l. 13.

Length of head $\frac{1}{4}$, of caudal $\frac{1}{5}$, height of body $\frac{2}{7}$ of the total length.

Eyes. Diameter $\frac{1}{4}$ of length of head, $1\frac{1}{2}$ diameter from end of snout, and 1 diameter apart.

Body oblong, compressed, equally convex along both profiles. Occipital crest well developed.

The posterior extremity of the maxilla extends to below the anterior edge of the orbit.

Teeth. Villiform in the upper jaw, and in a narrow band in the lower jaw; also present on vomer, palate, and tongue.

Fins. Pectoral elongated and falciform, reaching to above the ninth anal ray. Dorsal rays, first two elongated, decreasing as far as the twelfth. First three anal rays likewise somewhat elongated.

Scales present on the chest.

Lateral line forms a slight curve anteriorly, ending opposite to the tenth dorsal ray; it is strongly raised on the free portion of the tail, where only plates exist.

Colours. Silvery. A small black opercular spot. A black band along the vertical margin of the preopercle.

Hab. Andamans.

103. *CARANX CILIARIS*, Bl.

104. *CARANX SPECIOSUS*, Forsk.

105. *CARANX OBLONGUS*, Cuv. & Val. *Ro-thul-dah*, And.

106. *CHORINEMUS TALA*, Cuv. & Val.

107. *CHORINEMUS LYSAN*, Forsk.

108. *CHORINEMUS TOOLOO*, Cuv. & Val.

A large specimen was taken absolutely covered with parasites.

109. *TRACHYNOTUS OVATUS*, Linn.

110. *PSETTUS ARGENTEUS*, Linn. *Oo-chra-dah*, And.

111. *EQUULA FASCIATA*, Bl.

112. *EQUULA DUSSUMIERI*, Cuv. & Val.

113. *EQUULA RIVULATA*, Schleg.

114. *EQUULA GERROIDES*, Bleeker.

115. *EQUULA SPLENDENS*, Cuv. & Val.

116. *GAZZA EQUULEFORMIS*, Rüpp.

Two small specimens were captured.

117. *PLATAX VESPERTILIO*, Bl.

Copper-coloured, having a brown ocular band reticulated with black. Pectoral and caudal white, except their bases, which are brown. Ventral with dark edges.

Specimens up to $3\frac{1}{2}$ inches in length.

118. *PLATAX TEIRA*, Bl.

Family SCOMBRIDÆ*.

119. *SCOMBER REANI*, sp. nov. = *microlepidotus*

B. vi. D. $6\frac{1}{12}$, v. P. 19. V. $1\frac{1}{5}$. A. $1\frac{1}{11}$. C. 19. Vert. $9\frac{1}{22}$.

Length of head $\frac{1}{4}$, of caudal $\frac{1}{5}$, height of body $\frac{1}{4}$ of the total length.

Eyes with wide adipose margins. Diameter $\frac{2}{7}$ of the length of head, 1 diameter from end of snout, $1\frac{1}{2}$ diameter apart.

The maxilla extends to opposite the posterior margin of the orbit. Snout pointed; opercles scaly.

Fins. A groove along the base of the first dorsal fin, extending halfway to the base of the second dorsal. Caudal deeply forked, a keel along either side of its base.

Air-bladder present.

Cæca pylori numerous.

Colours. Back bluish green, becoming silvery white along the abdomen. A darkish longitudinal band along the lateral line, three above it, and two yellow ones below it.

Hab. Andamans, where it is very common up to 12 inches in length. It is said to refuse all baits.

* *CUBICEPS INDICUS*, sp. nov.

D. $10\frac{1}{14}$. P. 22. V. $1\frac{1}{5}$. A. $3\frac{1}{15}$. C. 15. L. 1. 33.

Length of head nearly $\frac{1}{3}$ ($\frac{3}{10}$), of caudal $\frac{2}{13}$, height of body nearly $\frac{1}{2}$ ($\frac{3}{8}$) of the total length.

Eyes. Diameter $\frac{2}{3}$ of length of head, $\frac{1}{2}$ a diameter from end of snout, nearly 1 diameter apart.

Body compressed. Snout rather obtuse. Maxilla extends to below the anterior margin of the orbit. Preopercle crenulated.

Teeth in a fine single row in either jaw.

Fins. Dorsal spines feeble. Pectoral not elongated, its length being rather less than that of the head. Caudal slightly emarginate.

Scales cycloid.

Lateral line consisting of small scales in upper fourth of body.

Colours silvery.

Hab. Several specimens up to 3 inches long were taken at Madras along with the species of *Tholichthys* (?) previously adverted to. I have placed one in the British Museum.

120. SCOMBER KANAGURTA, Cuv. & Val. *Look-wa-dah*, And.
Not so numerous as the last species.

121. ECHENEIS REMORA, Linn.

122. STROMATEUS NIGER, Bl. *Ko-lig-dah*, And.

This fish is rare at the Andamans. On showing one to a convict employed on the fisheries, he stated it was the first that he had seen.

Family GOBIIDÆ.

123. GOBIUS GIURIS, Ham. Buch. *Poo-dah*, And.

Small specimens were taken in the fresh and brackish waters.

124. GOBIUS ALBOPUNCTATUS, Cuv. & Val.

125. GOBIUS ACUTIPINNIS, C. & V. *Mang-moo-goo-da-lah-dah*, And.

126. GOBIUS VIRIDIPUNCTATUS, Cuv. & Val.

127. GOBIUS ORNATUS, sp. nov.

D. $6\frac{1}{10}$. P. 21. V. $1\frac{1}{5}$. A. 11. C. 13. L. l. 26. L. tr. 9.

Length of head $\frac{1}{4}$, of caudal $\frac{1}{5}$, height of body $\frac{1}{5}$ of the total length.

Eyes. Diameter $\frac{1}{3}$ of length of head, 1 diameter from end of snout, $\frac{1}{3}$ of a diameter apart.

Body elongated and compressed; snout obtuse. Head rather broader than high. Jaws of equal length, the posterior extremity of the maxilla extending to below the anterior margin of the orbit.

Fins. Pectoral extends to opposite the end of the ventral, its eight upper rays are silk-like. First dorsal much lower than the second, the posterior rays of which reach the caudal fin. Anal of the same character as the second dorsal. Caudal rounded, central rays somewhat the longest.

Scales in parallel rows; seven between the second dorsal and anal fins. They extend anteriorly as far as the orbit; none on cheeks and opercles.

Colours. Light brown, with three or four horizontal rows of black oblong blotches along the sides, and some fine yellow dots in the centre of some of the scales. Dorsal fin with three black bars or blotches. Second dorsal and anal with many small dots.

Hab. Andamans.

128. GOBIUS ANDAMANENSIS, sp. nov.

B. iv. D. $6\frac{1}{10}$. P. 17. V. $1\frac{1}{5}$. A. 10. C. 11. L. l. 26-29.

Length of head $\frac{2}{9}$, of caudal nearly $\frac{1}{3}$, height of body $\frac{2}{9}$ of the total length.

Eyes. Diameter $\frac{1}{4}$ of length of head, $1\frac{1}{2}$ diameter from end of snout, $\frac{3}{4}$ of a diameter apart.

Upper profile of head rounded, a great rise from the mouth to opposite the upper margin of the orbit; head two-thirds as wide as long.

The posterior margin of the maxilla extends to under the middle third of the orbit.

Teeth villiform; small canines.

Fins. All the dorsal spines flexible and elongated, the first three being the longest. The posterior rays of the second dorsal prolonged, reaching beyond the base of the caudal, which latter is pointed. Posterior anal rays resemble the posterior dorsal ones. Pectoral reaches to beyond the front margin of the anal; the ventral does not extend so far.

Scales ctenoid, nine rows between the commencement of the second dorsal and anal, none before or between the orbits; they are smallest near the nape.

Colours. Olive, spotted all over with rusty. Rays yellow, barred and dotted with purplish red, which, however, in the anal are placed transversely, whilst it has a yellow margin.

Hab. Brackish waters in the Andamans.

129. GOBIUS GOBIODON, Day.

130. GOBIUS STOLICZKÆ, sp. nov.

D. 6/11. P. 15. V. 1/5. A. 11. C. 15. L. l. 48.

Length of head $\frac{1}{4}$, of caudal $\frac{1}{4}$, height of body $\frac{2}{5}$ of the total length.

Eyes. Diameter $\frac{1}{5}$ of length of head, 2 diameters from end of snout, 1 diameter apart.

Head broader than high, and longer than broad. Snout rather long, and a considerable rise from it to the orbits, which are near the summit of the head; upper jaw longest.

Teeth. Canines absent.

Fins. First dorsal somewhat lower than the second. Caudal cut square. Upper pectoral rays silk-like, the base of the fin not fleshy; the fin reaches to above the commencement of the anal. Membrane of ventral fin well developed.

Scales strongly ctenoid, slightly smaller on the nape than on the body. Fourteen rows between the second dorsal and the anal fins. Cheeks and opercles scaled.

Colours. Olive, marbled with darker. Head spotted with black and marked with short black lines. Both dorsals spotted. A jet-black mark at the posterior portion of the first dorsal fin. Caudal barred. A black mark at the upper part of the base of the pectoral.

Hab. Andamans, in brackish water.

This species is allied to *G. grammepomus*, in which latter, however, the head is scaleless, and the lower jaw somewhat the longest.

I have named it after my esteemed friend Dr. Stoliczka.

131. APOCRYPTES LANCEOLATA, Bl.

132. APOCRYPTES MACROLEPIS, Blkr.

133. APOCRYPTES CANTORIS, sp. nov.

D. 6/27. P. 19. A. 26. C. 17.

Height of body $\frac{1}{6}$, length of caudal $\frac{2}{9}$, of head $\frac{2}{9}$ of total length.*Eyes* situated in second fifth of the head, $\frac{2}{3}$ of a diameter apart.

The maxilla extends to below the middle of the orbit.

Teeth. The anterior in the upper jaw enlarged, whilst those in the lower jaw are horizontal. A pair of canines at the symphysis.*Fins*. Ventral disk not adherent to the abdomen. First dorsal some distance from the second; its first three rays rather elongated. Second dorsal with only a notch between it and the caudal, which latter is pointed. Base of pectoral rather fleshy.*Scales* very minute, most visible in the posterior part of the body.*Colours*. Olive. First dorsal dark, with three black bands along it. The upper portion of the caudal dark and spotted. Cheeks and under surface of the head with black spots.

134. EUCTENOGOBIOUS ANDAMANENSIS, sp. nov.

B. iv. D. 6|13. P. 15. V. 6. A. 13. C. 15. L. r. about 60.

Length of head $\frac{1}{5}$, of caudal $\frac{2}{7}$, height of body $\frac{1}{5}$ of the total length.*Eyes* rather elevated. Diameter $\frac{1}{5}$ of length of head, $1\frac{1}{2}$ diameter from end of snout.

Cleft of mouth oblique. The posterior extremity of the maxilla extends to beneath the middle of the orbit. A longitudinal crest on the nape leads towards the commencement of the dorsal fin.

Teeth conical and fixed, in a single row in the jaws; fine canines in the lower jaw.

Anal papilla present.

Scales largest posteriorly.*Fins*. Pectoral pointed, and reaching to above the commencement of the anal. Dorsal spines flexible and elongated. Caudal pointed. Ventrals not adherent to the abdomen. A notch between the two dorsal fins.*Colours*. Dark green, with a dark mark at the base of the caudal. Fins darkish.

Length of the longest of the three specimens captured 4 inches.

Hab. Andamans, in brackish water.135. PERIOPHTHALMUS KÆLREUTERI, Schn. *Chood-mud-dah*, And.

136. BOLEOPHTHALMUS BODDAERTI, Pall.

137. ELEOTRIS SINENSIS, Lacép.* *Lee-mee-jo-do-dah*, And.On opening a specimen $4\frac{1}{2}$ inches long, its stomach was found to be full of small crabs. This species lives in brackish water.* In the 'Proceedings' of this Society for 1869, p. 517, I made a few short remarks upon *Eleotris scintillans*, Blyth, observing its apparent analogy to the *Eleotris ophiocephalus*, C. & V., or *E. cantor*, Günther, but not redescribing

138. *ELEOTRIS FUSCA*, Bl.139. *ELEOTRIS CAPERATA*, Cantor.

D. $6\frac{1}{8}$. P. 21. V. $\frac{1}{5}$. A. $\frac{1}{8}$. L. 1. 30.

Length of head $\frac{2}{7}$, of caudal $\frac{2}{11}$, height of body $\frac{2}{9}$ of the total length.

Eyes. 1 diameter from end of snout.

Supraorbital margin serrated, likewise a serrated ridge on either side of the posterior limb of the intermaxillary.

Teeth villiform, outer row rather the largest.

Fins. Upper pectoral rays silk-like. Dorsal and anal rays rather produced. Central caudal rays the longest.

Scales ctenoid, nine rows between second dorsal and anal.

140. *ELEOTRIS OPHIOCEPHALUS*, C. & V. *A-rig-dah*, or *Mu-took-dah*, And.

D. $6\frac{1}{8-9}$. P. 16. V. $1\frac{1}{5}$. A. $\frac{1}{7}$. C. 15. L. 1. 35. Cæc. pyl. 2.

This species is very common in the brackish and fresh waters of the Andamans. I had a very fine specimen, $9\frac{1}{2}$ inches long, collected for me by Lieut. Protheroe, and which I have placed in the British Museum. Its appearance is very like that of an *Ophiocephalus*; whilst what is more remarkable is that both have two cæcal appendages.

141. *AMBLYOPUS HERMANNIANUS*, Lacép.142. *GOBIODON QUINQUESTRIGATUS*.

Family OPHIOCEPHALIDÆ.

143. *OPHIOCEPHALUS GACHUA*, H. B. *Chad-dah*, And.

Family BLENNIIDÆ.

144. *SALARIAS FASCIATUS*, Bl. *Cha-la-ta*, And.

the species, the type being too damaged for that purpose. However, since then I have obtained at Akyab a fine specimen 3 inches long.

D. $6\frac{1}{8}$. P. 15. A. 8. C. 13. L. 1. 47.

Length of head nearly $\frac{1}{3}$ ($\frac{4}{13}$), of caudal $\frac{1}{5}$, height of body $\frac{2}{9}$ of the total length.

Eyes. Diameter $\frac{1}{2}$ of length of head, $1\frac{1}{4}$ diameter from end of snout and apart.

Head rather obtuse, superiorly flattened; lower jaw longest. Cleft of mouth extends to below the posterior third of the orbit.

Teeth in villiform bands, with the outer row in the lower jaw somewhat enlarged.

Scales ctenoid, those on the upper surface of the head and chest smaller than those on the body. The rows are irregularly arranged; there are thirty-four between the snout and the base of the first dorsal, they extend to before the eyes; there are fifteen rows between the second dorsal and anal.

Colours. Brownish; dorsal, caudal, and anal spotted all over, their edges white.

145. *SALARIAS FUSCUS*, Rüpp.
Nicobars.
146. *SALARIAS BELLUS*, Günther.
147. *SALARIAS LINEATUS*, Blkr.
148. *SALARIAS DUSSUMIERI*, Cuv. & Val.
149. *ANDAMIA EXPANSA*, Blyth.
Andamans and Nicobars.

Family SPHYRÆNIDÆ.

150. *SPHYRÆNA JELLO*, C. & V. *Thal-lib-dah*, And.

Family TRICHIURIDÆ.

151. *TRICHIURUS HAUMELA*, Forsk. *Pa-pa-dah*, And.
152. *TRICHIURUS SAVALA*, Cuv. & Val.

Family FISTULARIDÆ.

153. *FISTULARIA SERRATA*, Bl.
This fish appears to delight in living in the mud.

Order ACANTHOPTERYGII PHARYNGOGNATHI.

Family POMACENTRIDÆ.

154. *AMPHIPRION BIFASCIATUS*, Bloch.
This species was captured in the same localities as the next.

155. *AMPHIPRION PERCULA*, Lacép. *Eá-ole-jo-do-dah*, And.
The literal translation of the Andamanese name is Turtle's stomach. It is generally to be found alive and well inside large specimens of *Actiniæ*, which latter are supposed to be the stomachs of turtles.

156. *AMPHIPRION AKALLOPISUS*, Bleeker.

157. *AMPHIPRION EPHIPIUM*, Bloch.

Andamans and Nicobars.

I possess a fine series of this species, leading up from the immature *Amphiprion tricolor* of Günther, with its pearl-coloured band, to the adult *A. ephippium*, in which the band has become completely obsolete. In this series there are the whole of the intermediate colorations.

158. *DASCYLLUS ARUANUS*, Linn.

159. *POMACENTRUS BIFASCIATUS*, Bleeker.

160. *POMACENTRUS TRIMACULATUS*, Cuv. & Val.

161. POMACENTRUS TRILINEATUS, Cuv. & Val.

Nicobars.

162. POMACENTRUS PUNCTATUS, Q. & G.

163. POMACENTRUS BANKANENSIS, Bleeker.

Andamans and Nicobars.

164. GLYPHIDODON SORDIDUS, Forsk. *Chák-mud-dah*, And.

This fish was very common, and frequently shot by the Andamaneese.

165. GLYPHIDODON COCHINENSIS, Day.

166. GLYPHIDODON AFFINIS, Günther.

167. GLYPHIDODON BENGALIENSIS, Cuv. & Val.

168. GLYPHIDODON ANABATOIDES, Blkr.

D. $\frac{11-12}{10}$. P. 15. V. 1/5. A. 2/10. C. 17. L. l. 26. L. tr. $\frac{2\frac{1}{2}}{9}$.

Length of head $\frac{1}{4}$, of caudal $\frac{1}{4}$, height of body $\frac{2}{5}$ of the total length. *Eyes* $\frac{1}{2}$ a diameter from end of snout.

Width of preorbital $\frac{1}{3}$ of that of orbit; suborbitals very narrow.

Colours. Olive; each scale on the head, along the back, and on the upper half of the sides with a brilliant green-blue centre. Pectoral with a black spot superiorly.

Lives around the coral, hiding itself amongst its branches when in fear.

169. GLYPHIDODON ANTJERIUS, Cuv. & Val.

170. GLYPHIDODON MODESTUS, Schleg.

171. GLYPHIDODON BATJANENSIS, Blkr.

D. 12/15. A. 2/13.

Family LABRIDÆ.

172. CHÆROPS ANCHORAGO, Bl.

Colours. Yellow; cheeks with large scarlet spots. A black vertical band extends from the interspace between the fourth dorsal spine and sixth dorsal ray to the middle of the body, divided anteriorly from another by a whitish ground-colour, whilst nearer to the head exists a third dark band. Dorsal and caudal fins margined with orange.

173. CHEILINUS CHLORURUS, Bl.

174. LABRICHTHYS BICOLOR, sp. nov.

D. 9/11. P. 13. V. 1/5. A. 3/10. C. 15. L. l. 26. L. tr. 5/12.

Length of head nearly $\frac{1}{3}$, of caudal $\frac{1}{6}$, height of body $\frac{1}{3}$ of the total length.

Eyes. Diameter $\frac{1}{4}$ of length of head, $1\frac{1}{2}$ diameter from end of snout, 1 diameter apart.

Teeth in a single row; no posterior canines.

Fins. Posterior dorsal spines the longest. Caudal cut square.

Scales. About three rows of very small ones on the cheeks, and a few on the upper part of the opercles.

Colours. All that portion of the body behind a line from the commencement of the dorsal to the base of the anal dark violet, some of the lower scales being blue-spotted; anterior to this nearly white below, but darker along the top of the head, whilst most of the scales have more or less dark spots.

Length nearly 4 inches in the single specimen obtained.

175. *EPIBULUS STRIATUS*, sp. nov.

D. 9/10. P. 11. V. 1/5. A. 3/8. L. l. 19. L. tr. 2/7.

Length of head above $\frac{2}{5}$, of caudal $\frac{2}{11}$, height of body $\frac{2}{5}$ of the total length.

Eyes. Diameter $\frac{2}{7}$ of length of head, 1 diameter from end of snout and apart.

The extremity of the lower jaw reaches to opposite the posterior margin of the orbit, and the posterior process of the intermaxillary to opposite the last third of the orbit.

Fins not elongated.

Lateral line interrupted opposite the middle of the soft dorsal.

Colours. A white line between the orbits, and two more on the head, the first of which runs from the eye to the snout; the second descending from the orbit meets with the one from the opposite side. Body greenish brown, with five narrow milk-white vertical bands: the first runs from the opercles to before the ventral fin; the second from the second dorsal spine to the end of the ventral fin; the third from the centre of the dorsal spines to the base of the anal; the fourth from the end of the dorsal fin to the end of the anal; and the fifth round the base of the caudal. Soft dorsal and termination of anal white.

Length of single specimen $1\frac{5}{10}$ inch.

176. *HEMIGYMNUS MELANOPTERUS*, Bl.

The coloration of the caudal fin was darker in the Andamanese specimens than shown in Bleeker, and the scales were dotted with blue.

177. *STETHOJULIS STRIGIVENTER*, Bennett.

178. *PLATYGLOSSUS SCAPULARIS*, Bennett.

179. *PLATYGLOSSUS LEPARENSIS*, Blkr.

Andamans and Nicobars.

180. *PLATYGLOSSUS NOTOPSIS*, K. & v. H.

181. *JULIS LUNARIS*, Linn.

This fish is easily taken by a bait; and the natives appear rather to esteem it as food.

Colours. Pectoral spot reddish violet. Head violet, with several oblique reddish bands. Body green; each scale with a vertical red streak, forming bands. Dorsal fin red, with a blue and yellow margin. Anal violet, with a yellow edge. Caudal yellow, its base and lobes green.

182. *GOMPHOSUS MELANOTUS*, Blkr.

D. 8/13. P. 16. V. 1/5. A. 2/11. C. 13. L. l. 26. L. tr. 3/10.

Caudal fin cut square in this specimen.

Colours. Upper part of head and back deep brown, becoming lighter on the sides; each scale darkest at its base; cheeks pinkish. Pectoral yellow. Vertical fins dark-coloured, becoming deep brown externally, with a very narrow light edge; caudal the same, with black margin, and a rather wider white edging. Ventrals whitish, the outer ray brown.

183. *CALLYODON VIRIDESCENS*, Rüpp.

Common.

184. *PSEUDOSCARUS RIVULATUS*, C. & V. *Ar-dah*, And.

D. 9/10. P. 14. V. 1/5. A. 2/9. L. l. 22. L. tr. 2/7½.

This beautiful fish is mostly taken near coral-reefs.

185. *PSEUDOSCARUS TROSHELLI*, Blkr. *Poo-eo-dah*, And.

Very common, and eaten by the aborigines.

Family GERRIDÆ.

186. *GERRES FILAMENTOSUS*, C. & V. *Po-ro-chab-dah*, And.187. *GERRES POETI*, C. & V.188. *GERRES ACINACES*, C. & V.189. *GERRES ABBREVIATUS*, Blkr.

One specimen 6 inches long.

Order ANACANTHINI.

Family PLEURONECTIDÆ.

190. *PSEUDORHOMBUS ARSIUS*, H. B.191. *PSEUDORHOMBUS RUSSELLII*, Gray. *Ky-tha-thong-dah*, And.

In some examples of this common species the body and fins were covered with fine black spots.

192. RHOMBOIDICHTHYS LEOPARDINUS, Günther.

D. 80. A. 68. L. 1. 76.

193. PARDACHIRUS PAVONINUS, Lacép.

Order PHYSOSTOMI.

Family SILURIDÆ.

194. PLOTOSUS CANIUS, H. B. *Lee-mee-dah*, or *Bon-dah*, And.

Found in the muddy estuaries in considerable numbers.

195. PLOTOSUS ANGUILLARIS, Bl.

Found in the same localities as the last species.

196. ARIUS SUMATRANUS, Bennett.

Several specimens of this fish were obtained.

197. ARIUS ANDAMANENSIS, sp. nov. *E-roung-ud-dah*, And.

D. $\frac{1}{7}$ | 0. P. $\frac{1}{10}$. V. 7. A. 16. C. 17.

Length of head nearly $\frac{1}{5}$, of caudal $\frac{1}{4}$, height of body nearly $\frac{1}{5}$ of the total length.

Eyes. Diameter $\frac{1}{4}$ of length of head, $1\frac{1}{4}$ diameter from end of snout in the young, but greater in the adult.

Head slightly broader than high. The median longitudinal groove does not extend so far as the base of the occipital process, which last is once and a half as long as it is broad at its base, and strongly keeled; basal bone narrow. Upper surface of head granulated. The maxillary cirri extend to a little beyond the base of the pectoral fin, and the external mandibular ones to its base.

Teeth. Villiform in both jaws and palate, in which latter situation they form a triangular band on either side, converging anteriorly, but slightly separated down the median line.

Fins. Pectoral and dorsal spines serrated on both sides, the former as long as the head without the snout, the latter somewhat longer. Upper lobe of caudal the longest.

Colours. Silvery; the fins stained darker, and a black spot on the adipose dorsal.

Hab. Andamans, where this fish attains a large size, but is far from being common.

198. KETENGUS TYPUS, Blkr.

Family SCOPELIDÆ.

199. SAURIDA TOMBIL, Cuv. & Val.

Family SCOMBRESOCIDÆ.

200. BELONE CAUDIMACULATA, C. & V. *Thook-o-doo-noo-dah*, And.

201. *BELONE CHORAM*, Forsk.

Colours. In a young specimen brown, with eleven dark vertical bands narrower than the ground-colour, also a dark band through the eye.

A common species, growing to a large size.

202. *HEMIRAMPHUS BUFFONIS*, C. & V. *Koo-door rock-o-dah*, And.

Common.

203. *HEMIRAMPHUS UNIFASCIATUS*, Ranz.

Very common.

Family CYPRINODONTIDÆ.

204. *HAPLOCHILUS PANCHAX*, H. B. *Cho-to-dah*, And.

This fish grows to a magnificent size at the Andamans, compared with what it attains in India.

Family CYPRINIDÆ*.

As far as my investigations extended, I was unable to obtain any specimens of true Carps on the Andamans.

Family CLUPEIDÆ.

205. *ENGRAULIS RUSSELLII*, Blkr. *Zoo-roo-cart-dah*, And.206. *ENGRAULIS MALABARICUS*, Bl. *O-pul-dah*, And.207. *ENGRAULIS BELAMA*, Forsk.

D. 14. A. 28-30. L. l. 36.

Eight spinate scales before, and seven behind the ventral fins.

A golden spot behind the opercles.

Large quantities of these fish are captured, dried, and sold; still no one could be found who had ever heard of any deleterious or poisonous results following their employment as food.

208. *ENGRAULIS TELARA*, H. B.209. *CHATOESSUS CHACUNDA*, H. B. *Kore-paig-dah*, And.

* In the 'Proceedings of the Zoological Society,' 1865, p. 296, I described the genus *Platacanthus* as new amongst the Loaches; however, the specimen subsequently turned out to belong to a known genus. Since then I described another species (1867, p. 941), as *Platacanthus maculatus*. As the genus *Platacanthus* is considered a synonym of *Lepidoccephalichthys*, it becomes necessary to define and name the genus to which the latter specimen belongs.

Genus *JERDONIA*, gen. nov.

Body elongated. Barbels eight, one rostral, two maxillary, and one mandibular pairs. A free bifurcated suborbital spine. Dorsal fin elongated (thirty rays). Internal pectoral ray osseous. Origin of anal slightly posterior to the termination of the dorsal.

210. *CLUPEA NEOHOWII*, C. & V.

This species of Sardine existed in abundance at the Andamans; and on sending out four convicts at Port Mouat with cast-nets to obtain them, they captured 260 lb. weight in four hours, and then had to return, as their boats could hold no more. They asserted they could continue fishing at this rate for months, had they a market for their captures. I tried making oil from these Sardines, but did not succeed; the reason of which I discovered subsequently at Calicut, on the Malabar coast. There the oil is prepared after the breeding-season of these fishes (namely June and July), subsequent to which period they become fat, and about August are suited for the manufacture of oil, and continue so for four months. Unless the livers are fat, no oil can be made; and it is either prepared from that gland alone or from the entire fish*.

211. *CLUPEA MELANURA*, C. & V.

I found this species pretty abundant, but not so much so as the last; they seem to prefer more sheltered localities.

212. *PELLONA DITCHOA*, C. & V. *Poo-nă-no-dah*, And.213. *DUSSUMIERIA ACUTA*, C. & V. *O-pul-lah*, And.214. *DUSSUMIERIA ELOPSOIDES*, Blkr.215. *ELOPS SAURUS*, Linn.216. *MEGALOPS CYPRINOIDES*, Brouss. *O-pul-dah*, And.

Family MURÆNIDÆ.

217. *ANGUILLA LABIATA*, Ptrs. *Pa-lug-dah*, And.

It is remarkable that this species, hitherto recorded from the east coast of Africa, should be found in the Andaman Islands.

218. *ANGUILLA BICOLOR*, M'Clell.

In possessing this East-Indian species, the Andamans show their similarity to the continent of Hindoostan and the Burmese territory.

219. *ANGUILLA VIRESCENS*, Ptrs. *Jee-tah-dah*, And.

The same remark applies to this East-African species as already made on the *A. labiata*.

220. *MURÆNESOX TELABON*, Cuv.221. *MURÆNICHTHYS SCHULTZII*, Blkr.222. *OPHICHTHYS COLUBRINUS*, Bodd.

* See my paper on "Turtle- and Fish-oils" (Madras Monthly Journal of Med. Science, April 1870).

223. *MURÆNA RÜPPELLII*, M'Clell.

This pretty species of Banded Eel was brought to me by the Andamanese as the only sort of Sea-snake existing there.

224. *MURÆNA TESSELLATA*, Rich.225. *MURÆNA TIGRINA*, Rüppell.226. *MURÆNA UNDULATA*, Lacép.227. *MURÆNA PICTA*, Ahl.228. *MURÆNA NEBULOSA*, Ahl.229. *MURÆNA MACRURUS*, Blkr.

Specimen 36 inches long. Another specimen exists in my collection from Madras.

230. *MURÆNA FLAVOMARGINATA*, Rüpp.231. *MURÆNA NIGRA*, sp. nov.

Length of head $\frac{1}{4}$ of body, tail nearly $\frac{1}{2}$ of the total length.

Eyes small, diameter half that of the snout.

Body and tail slender.

Posterior nostril a circular patent opening; anterior nostril tubular. Gill-openings narrow. Cleft of mouth extending to some distance behind the orbit.

Teeth generally obtuse; the maxillary ones pointed and in two rows; the intermaxillaries in several obtuse rows; the palatines rounded and biserial.

Fins. Dorsal and anal moderately developed; the former commencing just behind a vertical line from the gill-opening, and half as high as the body.

Colour uniform black.

This specimen, 16 inches long, was discovered under a large stone at low water at Port Blair.

Family PEGASIDÆ.

232. *PEGASUS DRACONIS*, Linn.

This specimen was given me by Dr. Rean; a convict picked it up on the shore. I twice saw, but did not obtain, what appeared to be this fish whilst at the Andamans.

Order LOPHOBRANCHII.

Family SYNGNATHIDÆ.

233. *SYNGNATHUS SPICIFER*, Rüpp. *Eã-de*, or *Lah-ã thã-dah*, And.

Microphis tenuis, Blyth.

The native name of this species signifies a Turtle's tail, which the Pipefish is considered to resemble.

234. *GASTROTOKEUS BIACULEATUS*, Bl.

The tail of the specimen obtained by me at the Andamans has been injured, as pointed out to me by Dr. Günther.

235. *HIPPOCAMPUS COMES*, Cantor.

This specimen was given me by Dr. Rean.

Order PLECTOGNATHI.

Family SCLERODERMI.

236. *TRIACANTHUS BIACULEATUS*, Bl. *Ko-tah-thoo-lay-po-dah*, And.

Very common.

237. *BALISTES VIRIDESCENS*, Bl. Schn.

Colours. A light ring round the muzzle, joining one from below, and dividing the black lip from a black band on the forehead. Body brownish olive, each scale darkest in the centre. A wide blackish band proceeds from the eye to the base of the pectoral fin. Vertical fins yellowish, with dark margins. Large blue blotches on the first dorsal fin.

238. *BALISTES FLAVIMARGINATUS*, Rüpp.239. *BALISTES ACULEATUS*, Linn.

Some beautiful specimens of this fish were brought me by the aborigines, who obtained them with their bows and arrows.

240. *BALISTES UNDULATUS*, Mungo Park.241. *ANACANTHUS BARBATUS*, Gray.242. *OSTRACION TRIGONUS*, Linn.

This specimen was given to me by Dr. Rean.

Family GYMNODONTES.

243. *TETRODON LUNARIS*, Bl. Schn. *Chu-mo-dah*, And.

The aborigines use both this and other species of *Tetrodon* as food; but it was observed to me that their intestines will assimilate any thing.

244. *TETRODON TESTUDINEUS*, Linn.245. *TETRODON IMMACULATUS*, Bl. Schn.246. *TETRODON SIMULANS*, Cantor.247. *TETRODON RETICULARIS*, Bl. Schn. *Ko-pud-dah*, And.

Subclass CHONDROPTERYGII.

Order PLAGIOSTOMATA.

Family CARCHARIIDÆ.

248. *CARCHARIAS WALBEEHII*, Blkr. *Ei-dah*, And.

249. *CARCHARIAS MELANOPTERUS*, Q. & G.

This is the species from the liver of which most of the medicinal fish-liver-oil is prepared in the Government factory at Calicut. No livers are accepted under 40 lb., and one was received of 290 lb. weight.

The presence or absence of the large marine *Plagiostomes* on the coasts of India greatly depends on the whereabouts of the Oil-Sardines and other shoals of *Clupeidæ* and *Scombridæ*. This is the chief reason why the western coast and Ceylon have so many more Sharks and Sawfishes than the eastern, where the *Clupea neohowii* and shoals of *Clupeidæ* and the *Scomber kanagurta* are comparatively rare. The Andamans, abounding in fish, possess their full complement of Sharks. Where small fish are in plenty as food, the Sharks appear to prefer them to human beings.

250. *ZYGÆNA BLOCHII*, Cuv.

Family PRISTIDÆ.

251. *PRISTIS CUSPIDATUS*, Latham.

The livers of this fish are useful for medicinal oil; a female Sawfish at Calicut, 14 feet long, had one of these glands weighing 185 lb.

Family RHINOBATIDÆ.

252. *RHYNCHOBATUS DJEDDENSIS*, Forsk.

253. *RHINOBATUS GRANULATUS*, Cuv.

Family TRYGONIDÆ.

254. *TRYGON UARNAK*, Forsk.

Family MYLIOBATIDÆ.

255. *AËTOBATIS NARINARI*, Euphr. *Ră-tă-charm-dah*, And.

The foregoing list of 255 species of fish is interesting as demonstrating the enormous numbers of sorts which resort to the almost unfished grounds off the Andaman Islands, where the sea appears alive with the finny tribes. Here the Sharks and Sea-perches find abundance of food; and the aborigines are able to sustain themselves by procuring fish from the sea, merely by the use of spears and bows and arrows.

It must also be remarked that the time I spent there was very little above three weeks; and though it is true that I had every assistance from the local authorities and the aborigines, and spared no personal

exertion, still very many species must have escaped me. However that may be, I am unaware of such a large number of marine species having been collected anywhere in such a short period.

As far as possible the foregoing fish have, when a doubt has arisen, been examined with the specimens at the British Museum, for facilities of doing which, and also for personal assistance, I have to express my obligations to Dr. Günther.

I have placed a considerable number of duplicates in the British Museum, retaining, however, my own large collection intact in this country until such time as I again return from India, when I trust I shall bring with me further additions to it.

2. Note on the Habits of the Pampas Woodpecker (*Colaptes campestris*). By CHARLES DARWIN, F.R.S.

In the last of Mr. Hudson's valuable articles on the Ornithology of Buenos Ayres*, he remarks, with respect to my observations on the *Colaptes campestris*, that it is not possible for a naturalist "to know much of a species from seeing perhaps one or two individuals in the course of a rapid ride across the Pampas." My observations were made in Banda Oriental, on the northern bank of the Plata, where, thirty-seven years ago, this bird was common; and during my successive visits, especially near Maldonado, I repeatedly saw many specimens living on the open and undulating plains, at the distance of many miles from a tree. I was confirmed in my belief, that these birds do not frequent trees, by the beaks of some which I shot being muddied, by their tails being but little abraded, and by their alighting on posts or branches of trees (where such grew) horizontally and crosswise, in the manner of ordinary birds, though, as I have stated, they sometimes alighted vertically. When I wrote these notes, I knew nothing of the works of Azara, who lived for many years in Paraguay, and is generally esteemed as an accurate observer. Now Azara calls this bird the Woodpecker of the plains, and remarks that the name is highly appropriate; for, as he asserts, it never visits woods, or climbs up trees, or searches for insects under the bark†. He describes its manner of feeding on the open ground, and of alighting, sometimes horizontally and sometimes vertically, on trunks, rocks, &c., exactly as I have done. He states that the legs are longer than those of other species of Woodpeckers. The beak, however, is not so straight and strong, nor the tail-feathers so stiff, as in the typical members of the group. Therefore this species appears to have been to a slight extent modified, in accordance with its less arboreal habits. Azara further states that it builds its nest in holes, excavated in old mud walls or in the banks of streams. I may add that the *Colaptes pitius*, which in Chile represents the Pampas species, likewise frequents dry stony hills, where only a few bushes or trees grow, and may be continually seen feeding on the ground. According to Molina, this *Colaptes* also builds its nest in holes in banks.

* P. Z. S. 1870, p. 158.

† Apunt. ii. p. 311 (1802).

Mr. Hudson, on the other hand, states that near Buenos Ayres, where there are some woods, the *Colaptes campestris* climbs trees and bores into the bark like other Woodpeckers. He says, "it is sometimes found several miles distant from any trees. This, however, is rare, and it is on such occasions always apparently on its way to some tree in the distance. It here builds its nest in holes in trees." I have not the least doubt that Mr. Hudson's account is perfectly accurate, and that I have committed an error in stating that this species never climbs trees. But is it not possible that this bird may have somewhat different habits in different districts, and that I may not be quite so inaccurate as Mr. Hudson supposes? I cannot doubt, from what I saw in Banda Oriental, that this species there habitually frequents the open plains, and lives exclusively on the food thus obtained. Still less can I doubt the account given by Azara of its general habits of life, and of its manner of nidification. Finally, I trust that Mr. Hudson is mistaken when he says that any one acquainted with the habits of this bird might be induced to believe that I "had purposely wrested the truth in order to prove" my theory. He exonerates me from this charge; but I should be loath to think that there are many naturalists who, without any evidence, would accuse a fellow worker of telling a deliberate falsehood to prove his theory.

3. Notes on three Species of Tortoises living in the Society's Gardens. By Dr. J. E. GRAY, F.R.S. &c.

(Plates XL. & XLI)

There are at present living in the Society's Gardens two species of Land-Tortoises and one of the more terrestrial Terrapins, which Mr. Bartlett assures me came direct from Chili. They are very interesting as containing at least one species of *Testudo* not as yet recorded in the catalogue. The other *Testudo* appears to be *T. elephantopus*, or the "Elephant-Tortoise of the Galapagos" of Mr. Harlan, which has hitherto been confounded with *T. indica*.

The more terrestrial Terrapin is *Rhinoclemmys annulata*, described in the Proc. Zool. Soc. 1860, p. 231, t. 29 (*Geoclemmys annulata*), as coming from Ecuador; so it must extend over a large part of South America. The animal has not been before described. It is black. The fore legs are covered with very large, convex, unequal scales; scales black, tipped with white, forming an interrupted band; toes very short, scarcely produced, covered with two or three convex band-like scales above; claws short, thick, black, white at the tip; hind feet with short, thick, black claws; scales of the soles of the feet large, convex, black, varied with white.

The others are:—

1. TESTUDO (GOPHER) CHILENSIS. (Plate XL.) B.M.

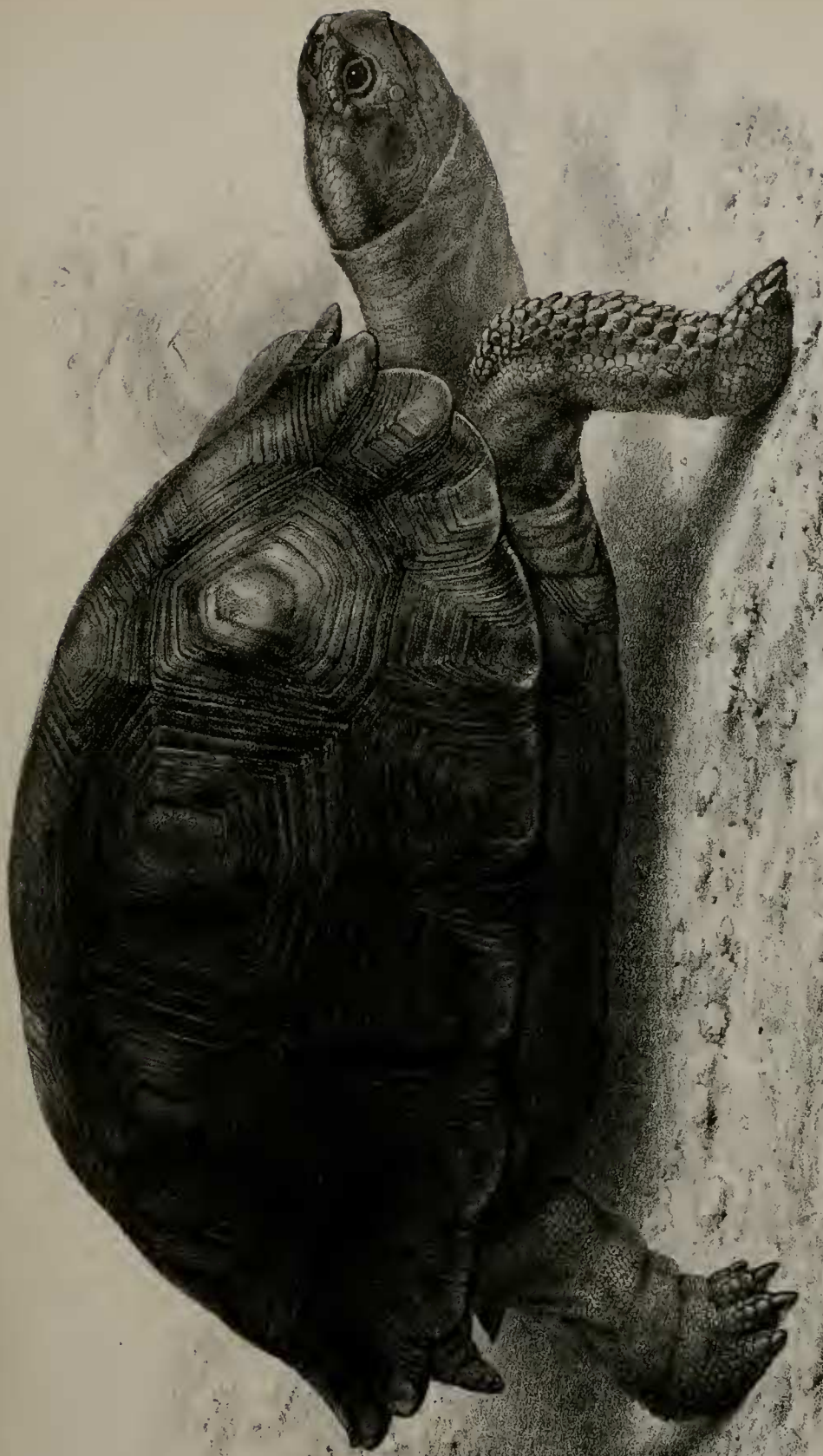
Testudo sulcata, D'Orbigny, Voy. dans l'Amér. MÉR. Rept. 6; Burmeister, Reise durch die La Plata-Staaten, ii. 521.



G. H. Ford

Testudo chilensis.

Mintern Bro's map



G. H. Ford.

Testudo elephantopus.

Mintern Bros' imp.

Testudo mauritanica, Déroussy, Descr. de la Confédération Argentine, ii. 38.

Hab. Chili (*Weisshaupt*); N. Patagonia (*D'Orbigny*); Mendoza and the Pampas (*Burmeister*); Monte Video and Buenos Ayres (*Déroussy*).

Beak keeled in front and strongly bidentate. Shell depressed, oblong; middle of the back rather flattened, dirty yellow; areola central; nuchal plate distinct; marginal plates shelving, with a very short keel; front and hinder marginal plates reflexed, making a serrated edge; head with one pair of supranasals; a hexangular (central) and two triangular frontal plates between the eyes, with some small shields between them and the supranasals, and a pair of elongated occipital plates; fore legs with a large spur at the elbow-joint, and numerous conical spines on the underside of the thighs, two of which are larger than the rest. The scales in front of the fore legs very large, unequal, convex.

This species is very like *T. sulcata* from Abyssinia in colour and general appearance; but the shell is much more depressed, and the marginal shields, which in that species are very high, with a sharp, narrow keel beneath, are in this species only moderately high and very sharply keeled. The pectoral plates are narrow towards the centre, and gradually spread out in a triangular shape, one-third from the centre; while in *T. sulcata* these plates are narrow and linear for two-thirds of their width and then suddenly expand into a pentangular disk. In this species the last vertebral shield is the width of the caudal, and one-half of the last and one-half of the last but one of the hinder marginal shields, whereas in *T. sulcata* it is only the width of the caudal and one-half of the last hinder marginal shields.

The reception of specimens of *Testudo elephantopus* and *T. chilensis* direct from South America, and the power of comparing them with specimens of *Testudo indica* from Seychelles and other localities in the Old World, and with *Testudo sulcata* from Africa, have been very important, as by the comparison of the actual specimens of these animals together it has been distinctly proved that, instead of the same species inhabiting the Old and the New World (which was an anomaly among the Testudinata), these species, which have been regarded as the same, are perfectly distinct; indeed *Testudo sulcata* from Africa is not only distinct from *T. chilensis*, but the two species belong to two different subgenera, the one belonging to the Old and the other to the New World. The only other instance, of which I am aware, of a land-Tortoise being supposed to be common to the two continents, is a species of *Kinixys*, which was first received from Demarara and Guadeloupe, but which is now known to be an African genus; and the specimens must have been taken to Demarara by some ships from Africa; for I am informed that it is not even colonized, much less naturalized, in that country; but it is probable that some of the negroes who are fond of living animals may have taken them with them.

2. *TESTUDO ELEPHANTOPUS*. (Plate XLI.)

B.M.

Testudo elephantopus, Harlan, Journ. Acad. Nat. Sc. Phil. v. 284, t. xi. (bad).

Testudo planiceps, Gray, P. Z. S. 1853, p. 12; Cat. Sh. Rept. p. 6.

Testudo californica, Férussac, Bull. Sci. Nat. 191.

Testudo nigra, Quoy & Gaim. ; Frey. Voyage Zool. i. 174, pl. 40; Meyen, Nov. Acta Akad. Leop. Carol. xvii. 188, t. xiii.

Geochelone schweiggeri, Fitzinger, Wiener Sitzungsberichte, x. 403 (1853). These are probably all synonyms of this species.

Shell and animal black. Head with one pair of frontal and a square crown-shield, with a flat crown. Thorax oblong, rather depressed, black; shields irregularly concentrically grooved; areola central. The beak slightly keeled in front and slightly bidentate. The fore legs covered with rather large scales, with a spur-like tubercle on the inner side of the elbow-joint; hind legs covered with numerous small scales, with larger scales on the soles, those on the hinder margin being prominent; fifth vertebral shield as broad as the two caudal and two hinder marginal shields.

This species is exceedingly like *Testudo indica*, but is distinguished from it by the flatness of the crown and the absence of a nuchal plate. Length over the back 10 inches; width $9\frac{1}{2}$ inches. The sternum truncated in front; gular plates small; pectoral plates narrow; anal plates small, notched behind.

There are two young specimens and several shells of a black Tortoise in the British Museum without any nuchal plates, which have hitherto been recorded as varieties of *T. indica*. They are all without any special habitat, and therefore may be from Chili.

This species is probably the Elephant-Tortoise of the Galapagos Islands, *Testudo elephantopus*, Harlan, who described his specimen as having "twenty-three marginal scutes—that is, having eleven on each half of the shell and a single one posteriorly." I also think, from the flatness of the head in the living animal, that the skull I figured under the name of *T. planiceps* is of this species. This I formerly doubted, because there was a specimen in the Zoological Society's Gardens, said to come from the Galapagos Islands, which had a very convex forehead, like the Indian specimens; but perhaps the habitat in this case was a mistake, or might not have belonged to the example which I examined.

4. Descriptions of two new Tortoises from India, in the Collection of T. C. Jerdon, Esq. By Dr. J. E. Gray, F.R.S. &c.

Mr. T. C. Jerdon has kindly sent me for examination the Tortoises which he collected in various parts of India. The collection consists of:—1st. *Batagur thurgi*, showing that the shell of this Tortoise, which has usually been classed with *Emys*, has a contracted front and hind margin of the cavity of the shell, as well as the masticating-

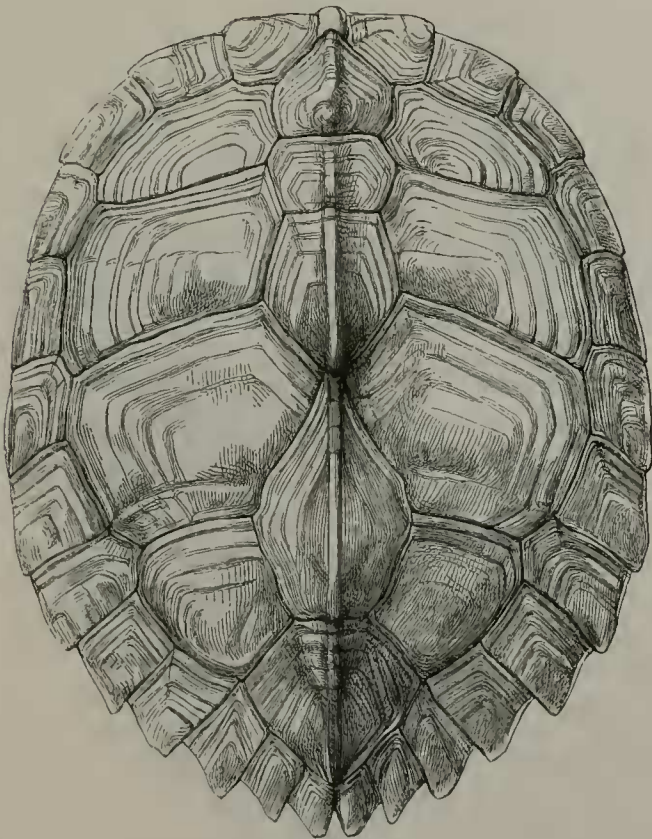
surface of the typical *Batagurs*. 2nd. A series of the *Pangshura flaviventris* of Günther, from Delhi, where it is common; but all the specimens, like the one we recently received from Cuttack from Mr. Day, have the sternum spotted, varied with black like the other species of the genus; the specimens only vary in some having the first vertebral more or less distinctly urn-shaped or contracted on the sides than others. 3rd. Two adult specimens of *Pangshura smithii* from Punjab, where it is abundant, which show the permanence of the characters assigned to this species.

Besides these it contains two species which had hitherto not occurred to me:—

1. PANGSHURA SYLHETENSIS, Jerdon, Journ. Asiat. Soc. Beng. 1870, p. 69.

Shell olive-brown, strongly and sharply dentated behind. The sides of the back shelving, but ventricose and with a central dorsal prominence. First vertebral plate five-sided, truncated behind, rather produced in front, with a blunt keel ending in a tubercle behind; the second broadly hexangular; the third elongate, narrowed

Fig. 1.



Pangshura sylhetensis.

and produced behind, with a very prominent keel ending in an acute point behind; the fourth much elongated, narrow and produced in front, with a narrow, sharp keel more prominent behind; the fifth pentangular, longer than broad, the hinder sides being as wide as three of the marginal plates. Underside pale black, varied.

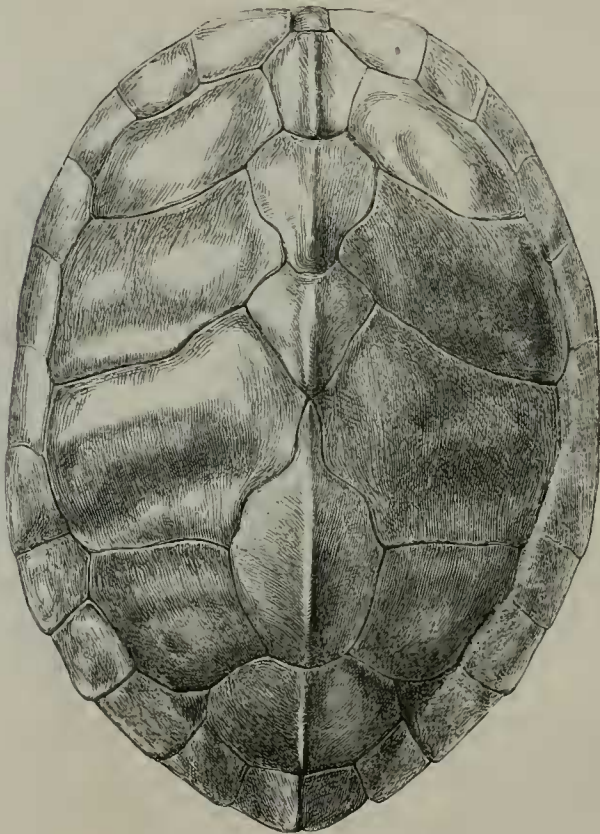
Hab. Sylhet, at the foot of the Khasia hills, in running streams.

The young specimen has the two front shields rather broader compared with the length than the others; and the largest specimen has the fourth vertebral shield rather irregular-shaped. This species differs from *P. flaviventris* in the keel of the first three shields being pale and not black, and much more indistinctly marked than in *P. tectum*; but is at once known by its strongly dentated margin and by the three hinder marginal plates on each side only occupying the hinder margin of the fifth vertebral plate. In all the other *Pangshuræ* the hinder margin of the fifth plate only occupies the width of two and a half or two and a quarter marginal plates.

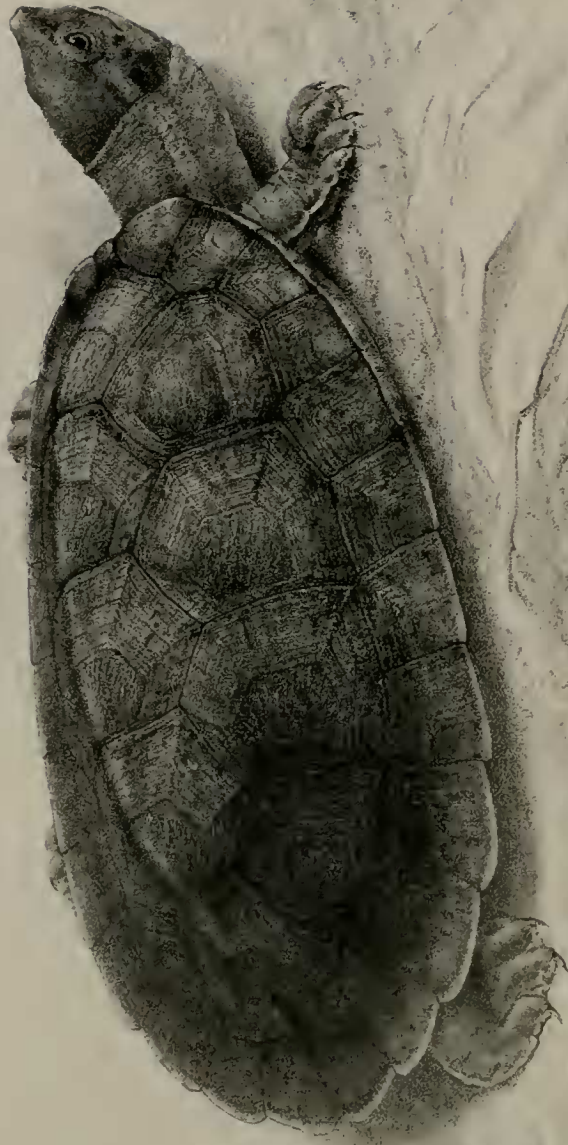
2. PANGSHURA VENTRICOSA, Suppl. Cat. Sh. Rept. p. 60.

The shell dark brown, oblong, and ventricose above, reddish yel-

Fig. 2.

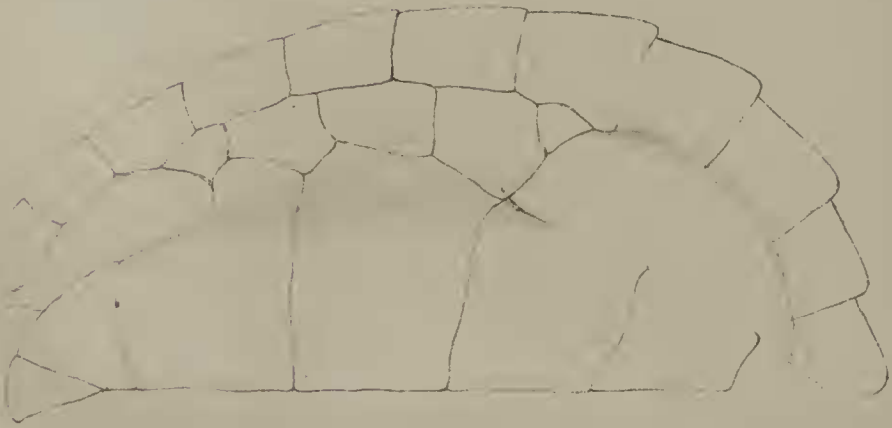


Pangshura ventricosa.



Maniem Bro^s imp.

CHLOROMYX ABNORMIS.



G. H. Ford

low, varied with black beneath; the hinder margin entire. Vertebral plates bluntly keeled in front; the first pentangular, twice as long as broad, narrow in front, and gradually narrower and truncated behind; the second elongate, suddenly narrowed and produced behind and rounded at the end; the third smaller than the second, pentangular, notched in front, narrow, acute, with a sharp prominent keel behind; the fourth elongate, oblong, twice as long as broad, six-sided, suddenly contracted and produced in front.

Hab. Assam.

This species is most like *Pangshura tecta*; but the shell is much more ventricose, and the first vertebral plate is much narrower and longer compared with its width, and the second vertebral plate is very differently shaped, as is also the fourth; but this may be an unusual variation. But the lightness, thinness, and ventricose character of the shell marks it as a peculiar species. The fourth, sixth, eighth, and especially the tenth marginal shields have the upper edge produced and more or less extended up between the sutures of the costal shields.

5. On the Family *Dermatemydæ*, and a Description of a living Species in the Gardens of the Society. By Dr. J. E. GRAY, F.R.S. &c.

(Plate XLII.)

Mr. Bartlett has sent to me to-day (August 6th) four living freshwater Tortoises to examine and name, recently purchased for the Society's collection, which, I am informed, came from the Laguna de Terminos in Yucatan.

They consist of two specimens of *Cinosternon* with a black head and a yellowish spot over the nose (but as yet I must own I do not know the characters of the species of this genus), an adult specimen of *Emys ornata* (the latter animal would not extend its neck, so that I could not see the colour of his head and neck; but it snapped most furiously at every thing that came within a few inches of it, and as rapidly withdrew its head), and a young specimen of what I take to be *Dermatemys abnormis* of Mr. Cope, which has not before come under my observation.

In the 'Proceedings' of the Society for 1847, p. 55, I described the shell of a large freshwater Tortoise which had been presented to the Society by Lieut. Mawe, R.N., who found it in "South America" in 1833, under the name of *Dermatemys mawiï*. It is peculiar, having the sterno-costal suture covered with four large distinct plates; and I stated that it in this respect agreed with *Platysternon*, but that it had a very differently formed shell and had much the external appearance of *Phrynops geoffroyi*, but there was no appearance of any scar on the inner surface of the sternum for the attachment of the pelvis, and that it had no intergular plate.

PROC. ZOOLOG. SOC.—1870, No. XLVIII.

The shell here described was presented to the British Museum by the Zoological Society, and is figured in the 'Catalogue of Shield Reptiles in the British Museum,' tab. 21.

In the 'Catalogue of Tortoises in the British Museum,' and in the 'Catalogue of Shield Reptiles,' I formed a particular section in the family *Emydæ* for *Platysternon* and *Dermatemys*, because they had these additional plates on the sterno-costal suture. The group contains two families: the *Dermatemydæ* are essentially water Tortoises, with broadly webbed feet; the *Platysternidæ* are amphibious, and they have strong narrowly webbed toes and the front of the fore legs covered with large plates.

M. Auguste Duméril, in the 'Catalogue Méthodique des Reptiles' described, in 1851, a species under the name of *Emys berardii* from two specimens in the Museum of Paris, said to have come from South America. In the 'Archives' of the museum, vol vi., for 1852, he redescribes and figures the species, observing that one of the specimens in the Museum was received from "Lieut. Maw." This must have been obtained from the Zoological Society, and is doubtless a fellow specimen to the one I described, and is said to have come from South America without any special habitat; and the other was brought by Captain Berard directly from the fresh waters of "Vera Cruz, Mexico." This species is very briefly and indistinctly described in both works, and the figure is by no means good. Probably M. Berard's specimen must be in a bad state; for the shell is described as covered with fine "irregular rugosities." The indications of division of shields, especially the dorsal ones, are very indistinct.

He figures the mouth, showing the alveolar surfaces of both jaws (t. xv. f. 4), but does not describe it. In the form of the mouth and the obscure streak from the back of the head, and the gular plate showing no indications of a central suture, it agrees with the specimen now in the Zoological Gardens, but is evidently an old specimen, while that which we have is young. M. Duméril does not take any notice, either in the description or figure, of the existence of any sterno-costal shields; indeed the sutures of them seem to be entirely obliterated in the aged specimen he figures; and he separates it from the *Emys trivittata* (that is, an Indian *Batagur*) by the absence of the three black bands and the difference of its origin.

Professor Owen in 1853, in the 'Monograph of the Fossil Chelonians of the Wealden Clay and Purbeck Limestone,' published by the Palæontological Society, published a genus under the name of *Pleurosternon*, which he characterizes thus:—"Testa depressa, lata, complanata; sternum integrum, ossibus undecim compositum, per ossicula marginalia cum testa conjunctum, scutis submarginalibus inter scuta axillaria et inguinalia positis." He does not make any reference to my genus *Dermatemys*; but the character here given is the exact counterpart, though in other technical terms, of that genus which was published four years previously; but in the description of one of the species he observes:—

"In addition to the axillary and inguinal plates there are three

scutes, and the under borders of the fifth, sixth, and seventh marginal scutes; these superadded scutes I propose to call 'submarginal scutes.' The *Platysternon megacephalum*, or large-headed Terrapin of the Chinese swamps, presents a corresponding but single supplementary 'submarginal scute' upon the under part of each lateral production of the plastron." This statement about *Platysternon* is entirely erroneous; for that genus, as well as *Dermatemys* and *Pleurosternon*, has three small "submarginal scutes" between the abdominal and marginal plates (see Proceedings of the Zoological Society, 1831, p. 106, where the genus was originally described, and the 'Catalogue of Shield Reptiles,' p. 49). The *Pleurosterna* are found in the freshwater limestone of Purbeck; and Professor Owen divides them into four species. I am still inclined to retain the genus, and I think that probably, when we have more materials, we shall find that the fossil genus will form a distinct group of the family.

Mr. Agassiz, in his 'Contributions to the Natural History of the United States,' published in 1857, probably misled by Duméril's figure, observes:—" *Emys berardi*, Dum. et Bib., seems also to belong to this genus (*Ptychemys*), judging from the description and figure of the jaws published by A. Duméril, 'Archives du Museum,' vol. vi. p. 251, t. 15" (vol. i. p. 434).

The British Museum having received from Mr. Salvin a specimen of *Dermatemys*, which he obtained in Guatemala, I published in the 'Proceedings of the Zoological Society,' 1864, p. 125, a history of the genus and a description of the animal, which, unfortunately, was not in a very good state, as it had accidentally got dry through the evaporation of the spirit and had again been placed in spirit.

In the 'Proceedings of the Academy of Natural Sciences' for 1868, p. 119, Mr. Cope describes a new species under the name of *D. abnormis*, from the Belize River, Yucatan, sent by Dr. Parsons, which differs in having the gular plates united and the vertebral plates broader than long. He observes that one species of *Dermatemys*, the *D. mavei*, is recognized by Dr. Gray as inhabiting Venezuela and Mexico. The same species, according to the same author, has been subsequently named *Emys berardii* by Prof. Duméril; and he further remarks, "I have not had an opportunity of seeing South-American specimens; but the excellent figure and descriptions of Gray render it certain that the individuals from that country, on which the species are based, really belong to another species from those of Mexico. The collection of the Smithsonian Institution furnishes another species from Belize, which I have hitherto identified as the same; the species may be thus distinguished." In a table he gives the characters by which he proposes to discriminate three species, *D. abnormis*, *D. berardii*, and *D. mavei*.

I do not know why he described his second species under the name of *D. berardii*; for none of the characters which he gives to his species are to be found either mentioned in M. Duméril's descriptions or shown in M. Duméril's plate. I have no specimen possessing such characters as he gives to the species.

I believe that the genus *Dermatemys* will be the type of a new family, which may be called *Dermatemydæ*, and thus characterized.

Fam. DERMATEMYDÆ.

Skull:—the head moderate, rather high, covered with a thin, soft, continuous skin; temples with small polygonal shields; zygomatic arch distinct; tympanum large, covered with a granular skin. Eyes lateral; iris circular, narrow. Nose produced, conical; nostrils apical, flesh-coloured. Beak strong: upper beak coloured like the skin of the head, hard; lower beak strong, hooked in front. Alveolar surface of the upper jaw with a triangular ridge parallel to the outer edge of the jaw, and with a short separate transverse ridge in front, separated from the front of the beak by a deep pit. Lower jaw with three or five strong teeth in front, which fit into the pit in front of the upper jaw. The alveolar surface flat, with a deep central groove along each side. Chin not bearded. Thorax oblong, the hinder edge expanded and slightly reflexed, covered with very thin, membranaceous shields, which have the areola in the young animals on the hinder margin. Sternum flat, united to the margin by a bony symphysis, rounded in front and notched behind. Sternal shields twelve, very thin, membranaceous. The gular plates small, triangular, sometimes united into a single plate, with three additional intramarginal plates on the suture between the triangular axillary and the band-like inguinal plates between the small abdominal and marginal plates. The cavity of the shell scarcely contracted at the opening. The legs short, fringed on the outer side, granular. Toes weak, broadly webbed. Tail short, thick, angular, with ridges of spines and a horny tip.

The head of these animals has much the appearance of *Batagur*, and the shell has a certain resemblance to those of that genus.

The form of the sternum might be mistaken for that of an *Hydraspis*; but it will be found that what looks like the intergular plate is, in fact, the small gular plates, which are sometimes separate, but usually united together, there being only six pairs of plates, without any anterior additional one.

Synopsis of the Genera.

1. DERMATEMYS. Crown flat. Vertebral shields elongate, the first the shortest. The gular plates separate or united.
2. CHLOREMYS. Crown convex. Dorsal shields wider than long. The gular plates united.

1. DERMATEMYS.

Head flat above, rather keeled on the sides. The crown narrow and produced behind. Temples with small polygonal shields. Thorax convex. Nuchal shield distinct, short. First vertebral plate as broad as long; second, third, and fourth longer than broad; the fifth narrow and produced in front, broad behind. Gular plates

small, separate or united together into one plate. Intramarginal plates three on each side; the hinder in contact with the abdominal and femoral plates. Abdominal plate long. Axillary plate distinct. Tail conical, with a central ridge of spines on its upper surface, and some scattered tubercles on the sides converging towards the point.

1. DERMATEMYS MAWII.

Gular plates very small, separate.

Dermatemys mawii, Gray, P. Z. S. 1847, p. 56; Cat. Shield Rept. p. 49, t. xxi.

Dermatemys mawei, Cope, Proc. Acad. Nat. Sc. Phil. 1868, p. 120.

Hab. South America (*Mawe*).

B.M.

2. DERMATEMYS SALVINII.

The gular plates united into a single narrow triangular plate; sides of the head and neck and upper surface of the feet olive, darker-spotted. In spirits.

Dermatemys salvinii, Gray, P. Z. S. 1864, p. 126 (animal).

Hab. Guatemala (*Salvin*).

B.M.

I cannot see any other difference between these two species except the form and union of the gular plates. I believe this is permanent; but we require more specimens to establish the fact. The head and sides of the neck of Mr. Salvin's specimen, in spirit, are pale olive with numerous darker spots; and the feet have some similar spots. There is a little difference in the size of the intermarginal plates of the two specimens, but not more than shown on the two sides of Mawe's original specimen.

Mr. Cope describes his *T. berardii* thus:—"One gular, and an intergular behind it; four or five inner marginals, the posterior in contact with femoral and abdominal; when only four, the median elongate; vertebral scuta much longer than broad; no dorsal keel; abdominal scuta equal or broader than those adjoining." I suppose that this character is from a Mexican specimen. M. A. Duméril's plate does not show any of them. The existence of any gular plate would indicate an irregularity in the specimen, or a structure which has not hitherto occurred to me, and, if normal, would remove the species to *Hydraspidae*.

2. CHLOREMYS.

Head rather convex above. Thorax rather depressed, broad. Nuchal shield distinct and short. Vertebral plates keeled; the first as broad as long; the second, third, and fourth broader than long; the fifth rather narrowed in front. The gular plates small, united into one narrow triangular shield. The intramarginal plates three on each side; the hinder largest and not, or only slightly, in contact with the femoral plate. Axillary plate triangular. Inguinal band-like, transverse. Tail conical, very short, granular.

The intramarginal plates are sometimes divided in halves on one or both sides.

CHLOREMYX ABNORMIS. (Plate XLII.)

Animal and shell olive above and white below; upper part and sides of the head and neck blackish olive, with a pale streak from the back of the eye, over the ear, along the side of the neck.

Dermatemys abnormis, Cope, Proc. Acad. Nat. Sc. Philad. 1868, p. 120.

Hab. "Yucatan, Belize River (*Dr. Parsons*)."

Mr. Cope's, as well as the one in the Gardens, is a young specimen; but he observes, "I cannot suppose the vertebral scutes become as narrow or the carapace as fully ossified in maturity as in the other species." In the colouring of the head it resembles the figure of *M. Auguste Duméril*, but not in any other character.

The young living specimen in the gardens of the Society, about 4 inches long, is dull olive-brown above, and pale yellowish beneath. The lower surface of the marginal plates olive, the sternal and submarginal shields being uniform white. The tail is very short, conical, rudimentary. Head black-olive; the end of nose red; the upper beak is of the same colour as the head, and looks as if covered with skin; but this is not the case, for it is very hard. The lower beak paler. There is a very indistinct, broad, rather irregular pale streak from the back edge of the eye along the back of the neck. The nuchal plate very small. Dorsal scutes very thin. The areolæ large, granular; those of the vertebral plates in the middle of the hinder margin of the shield; those of the costal plates rather above the middle of the hinder margin of the shield; of the marginal plates on the hinder outer margin of each shield as visible below as above, rather on the outer edge of the middle of the hinder part of the sternal plate, and quite on the hinder outer margin of the intramarginal plates. The skin of the neck and feet covered with small scales. The outer edge of the legs with a well-marked fringe; the front edge of the fore legs with numerous, very narrow, slightly curved band-like shields. The toes slender, covered above with narrow band-like plates, very broadly webbed to the claws. Claws 5.4, black, slender, and acute. Pupil black, surrounded by an olive iris, without any black spot on the side as in American Terrapins. The submarginal plates seem liable to vary in form and number; for in this specimen they differ on the two sides. On the right side there are seven: the first, which is probably an axillary plate, is small; then follow three moderate-sized, the middle one of which is divided across (this is clearly an accidental division); then there is a small triangular plate between the last and the transverse band-like inguinal plate. On the left side, which I should say had the normal structure, there is a rather larger axillary plate: three submarginal plates, the hinder being the largest, and a transverse band-like inguinal plate.



GEN. CAT. FISHES
PL. XXXI. FIG. 1.

6. Notes on a Specimen of *Cyclanosteus senegalensis* living in the Society's Gardens. By Dr. J. E. GRAY, F.R.S.

(Plate XLIII.)

The Society acquired by purchase, from a London dealer, on the 30th August, a fine living specimen of *Cyclanosteus senegalensis*, Gray (P. Z. S. 1864, p. 21), which is certainly the first I have ever seen, and, I believe, the first seen alive in Europe; and it is a very interesting animal, as it has the form of the freshwater Tortoise with all the other characters of the Mud-Tortoises or Soft-shield Turtles (Trionychidæ).

The specimen must be nearly adult; but it is not quite so large as the dorsal shield with its margin which the British Museum received from the Earl of Derby, who obtained it from his collector, Mr. Whitfield, from Gambia, which is figured under the name of *Cyclanosteus petersii* in the 'Catalogue of Shield Reptiles,' tab. 29. It has all the sternal callosities developed as in that figure; but the hinder pair, instead of being round and small, are considerably larger and oval. The odd or nuchal bone is placed in the margin of the cartilaginous shield, and separated from the front of the dorsal bony disk by a broad flexible space.

The animal is ovate, depressed; the back is convex, like a large *Batagur* or *Emys*, with a very broad, hard, cartilaginous margin, which is thin, but rounded on the edge; the hinder part of the margin is very broad and expanded, slightly concave on its upper surface, and bent up like that of several of the freshwater Tortoises. The whole upper surface is covered with a thick, smooth, blackish-olive skin, which completely hides the rugosities on the bony disk, and gives the animal the appearance of the skin of a porpoise or dolphin. The under surface is covered with a similar skin, but of a pure white colour, the white on the underside of the margin forming a narrow edge to the dorsal disk; the underside is equally smooth as the back, except over the callosities, which are tuberculated in concentric circles. The skin between the odd bone in the margin and the front of the bony dorsal disk is concentrically wrinkled. The head is rather large, olive or blackish, with pale spots on the upper part of the sides. The nose produced, black; nostrils flesh-coloured, small, circular, separated by a broad septum, and with a small internal lobe on the outer side of each. Eyes lateral; pupil small, black; iris greyish, without any spot on the sides; the lower eyelid larger, thin, pellucid, whitish. The hinder part of the fore feet very broad and expanded, lobulated on the edge, and folded together when contracted, with the three claws on the front part of the foot. The front of the sternum and its flaps as broad and of the same shape as the dorsal disk; the hinder part of the sternum broad; the lateral flaps large and separated from the hinder soft part of the sternum by a deep notch on each side.

This animal is interesting as being intermediate in form between

the usual flat-backed Mud-Tortoises and the very convex *Emyda* of the Indian tanks, which have a series of marginal bones in the margin of their cartilaginous dorsal shield.

7. Notes on *Bartlettia*, a new Species of Freshwater Tortoises belonging to the Family *Peltocephalidæ*. By Dr. J. E. GRAY, F.R.S. &c.

It has been well observed that after the greatest care some new fact in the structure of an animal that has been often observed will occur. I have been for several years collecting together the species of Tortoises, and more especially studying the osteology, and particularly the skulls of the *Testudinata*; I have published several papers on them, and have collected these papers together, with many additional observations and descriptions, as a 'Supplement to the Catalogue of Shield Reptiles in the British Museum,' which is printed and ready for distribution; and yet, before it has actually been published, an accidental circumstance has revealed to me that a series of specimens that I believed were all of one species, coming from nearly the same locality, consists of two most distinct species, belonging to two most distinct genera, marked by very great differences in the form of the alveolar process, which has been confirmed by the examination of the skulls or heads of a series of specimens of each species of different ages.

Mr. Edward Bartlett, during his excursion to Brazil for the purpose of collecting objects of natural history, sent to the Museum a series of specimens of a freshwater Tortoise which he obtained in the freshwater lakes in the region of the upper Amazons. They were considered to be half-grown examples of *Podocnemis expansa*, which they greatly resemble in all external characters; but on Mr. Edward Gerrard, junior, preparing a skeleton of one of them for the collection, it was discovered that it possessed a very different alveolar surface of the upper jaw; and on examining the jaws of the other specimens, they were all found to have the same peculiar character; therefore I have described and figured these jaws; and to point out, in the shortest manner, the differences between it and the other genera of the family, I have formed a tabular distribution of them.

PELTOCEPHALIDÆ.

Peltocephalidæ, Gray, Suppl. Cat. Sh. Rept. p. 82.

In the skulls of all the genera in this family the vomer is not ossified, and the internal nostrils of the skull are not divided by a septum, but leave a large open aperture in the front of the palate.

The bony vaulted arch that covers more or less completely the depression on the side of the skull for the temporal muscle, is entirely formed, according to Prof. Owen, of an extension of the parietal bone.

In my paper on the genus *Podocnemis* in the 'Proceedings' of the Society I pointed out that the *Podocnemis expansa* of Wagler and the *Emys expansa* of Cuvier, which had been considered the same species, had very different skulls, and I entered into the details of the differences between them.

In my paper in the 'Proceedings' of the Society for 1864, p. 133, I formed them into separate genera.

In *Bartlettia* and *Podocnemis expansa* both the ischiadic and iliac bones are affixed by a bony suture to the sternum.

The thorax of the animals of this family has the cavity contracted, like the shells of the greater part of the Bataguridæ of India. In a very large specimen of *Podocnemis expansa* the front contraction is separated from the margin of the cavity by a considerable space, and may be so in younger specimens; in the genus *Bartlettia* it is continuous with the margin of the cavity, as in all the Batagurs I have examined.

Tribe I. PELTOCEPHALINA.

The head high, subcompressed; parietal bone entirely covering the temporal muscle. Nose produced, rounded above, without any longitudinal groove.

1. PELTOCEPHALUS.

P. TRACAXA, Gray, Supp. Cat. Sh. Rept. p. 84.

B.M.

Tribe II. PODOCNEMINA.

Head depressed; parietal expanded, covering the upper part of the temporal muscle, leaving a broad rounded notch in the skull, between the end of the maxilla and the tympanic bone. Nose flattened, with a deep longitudinal groove.

2. CHELONEMYS.

Head elongate ovate; the alveolar surface of the upper jaw rather sinuous, convex in front and shelving behind, with two diverging ridges, separated by a broad longitudinal depression, the inner one low and indistinct. Lower jaw with a sharp outer edge and a deep longitudinal concavity, the inner margin elevated, divided by a central longitudinal groove into two ridges; the central notch produced forward between the under margin towards the apex of the central beak. (Cuvier, Oss. Foss. v. part 2, pl. 11. figs. 11, 12.)

C. DUMERILIANA, Gray, Suppl. Cat. Sh. Rept. p. 83.

B.M.

3. PODOCNEMIS.

Head short and broad; alveolar surface of upper jaw flat, with three diverging ridges, separated by a flat rugose space in the middle, the inner one low and distinct; lower jaw with a sharp outer edge, a deep longitudinal concavity, the inner margin elevated, divided

by a central longitudinal groove into two ridges; the central notch not produced forward. (Gray, Cat. Sh. Rept. tab. 37. f. 1.)

The young animal is black, the head ornamented with large white spots.

P. EXPANSA, Gray, Suppl. Cat. Sh. Rept. p. 83.

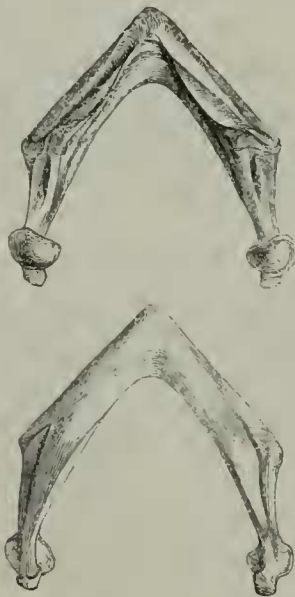
B.M.

4. BARTLETTIA. *pitipii*

Head short and broad; alveolar surface of the upper jaw flat in front, shelving and concave behind, with a very indistinct, short, subcentral ridge parallel to the outer margin; alveolar surface of the lower jaw with a slightly raised ridge on the outer edge, narrow, slightly concave in front, the inner edge obliquely raised into a sharp ridge, which is wide behind and narrow in front, with a rounded depression in the centre of the hinder edge (fig. 1). The central ridge in the horny beak of the upper jaw more distinct than in the skull.

The skull (fig. 2, p. 721) is short and depressed, the eyes separated, forehead convex; the head covered with hard shields, the crown-shield rounded in front, temporal shields large; chin with a single central beard; the cheek-shield covering part of the temporal muscle not covered by the bone. The animal olive, and the head not spotted.

Fig. 1.



Lower jaw of *Bartlettia pitipii*.

BARTLETTIA PITIPII.

B.M.

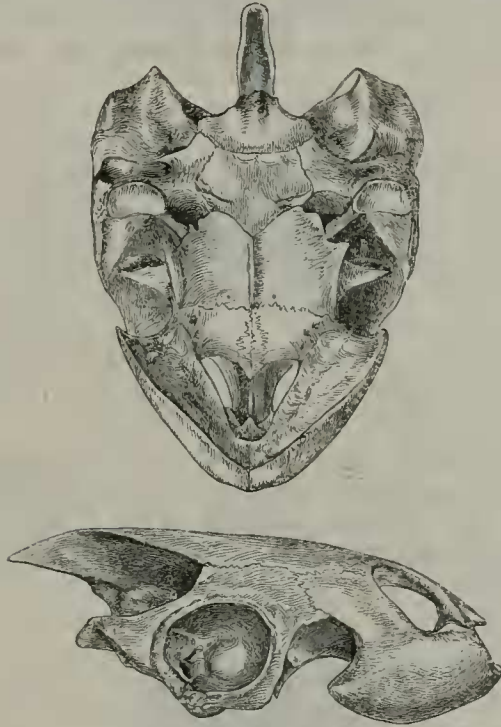
Shell olive-brown, ovate, hinder margin greatly expanded; the head olive above, rather paler below; the second and third vertebral

shields bluntly keeled, the keel most elevated on the suture between these two shields.

The sternum paler; the limbs, in spirit, pale yellowish white.

Hab. Lakes of the Upper Amazons (*Edward Bartlett*): called "Pitipii."

Fig. 2.



Skull of *Bartlettia pitipii*.

There are four specimens in the British Museum, the largest being 13 inches by 11 inches, and one has been prepared as a skeleton.

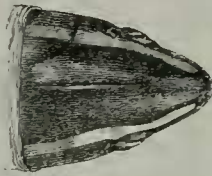
The shell is very like that of *Podocnemis expansa*; but the largest specimen we have of the latter is 31 inches long by 23 inches.

I have named this genus after Mr. Bartlett, the Superintendent of the Gardens of the Zoological Society, who has published several excellent papers on the manners, and habits, and growth of the animals under his care. It is only to be regretted that he has not printed more of his notes; for observations on these subjects from a person who has the power of accurately observing and duly estimating the importance of the facts observed, as Mr. Bartlett has shown that he possesses, are most valuable for science; such observations can only be made by one who has the animals constantly under his supervision, while the separation of the species, and the systematic zoological characters, are able to be best eliminated in extensive collections in museums.

8. Notes on the Species of *Rhinoclemmys* in the British Museum. By J. E. GRAY, F.R.S. &c.

Having received two or three specimens of this genus, with the heads in a good state, I have been induced to compare the heads of all the species, as I believe that the colouring of this part affords good specific characters. I append a short description of the head of each species, and a figure showing the character of the markings.

Fig. 1.



Rhinoclemmys melanosterna.

RHINOCLEMMYS MELANOSTERNA. (Fig. 1.)

Head black; crown deep black, with a narrow, opaque, white streak from the nostrils over the eyes to the upper part of the temples, a broad, pale, indistinct streak from the middle of the orbit to the front of the tympanum, and a small spot beneath it on the hind edge of the orbit.

Fig. 2.



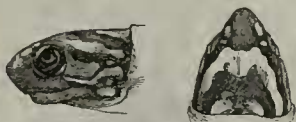
Rhinoclemmys scabra.

RHINOCLEMMYS SCABRA. (Fig. 2.)

Head black above; a round white spot on each side of the nose in front of upper edge of the orbit, with a white diverging streak on each side of the crown, commencing even with the middle of the upper part of the orbit, and extending to the temple, and with a small white spot on each side of the occipital edge of the crown; temples with a white streak from the middle of the back edge of the orbit, another from the lower part of the back edge of the orbit, both extending towards the ear, with two or three small spots between them; a third larger streak from the underside of the orbit, which is forked behind, one branch ascending and the other descending to the edge of the lower jaw, and with a round spot behind the fork; the chin white; the sides of the neck with numerous black and white streaks; the fore legs black, with a broad white streak down the

middle of each series of scales, extending along the upperside of each toe.

Fig. 3.



Rhinoclemmys scabra, var.?

RHINOCLEMMYS SCABRA, var. ? (Fig. 3.)

With all the marks of the preceding ; but the spots on the front of the eye are smaller, and the two diverging streaks are united together by a broad cross band on the front of the crown, just level with the back edge of the eye ; the spots on the occiput are larger and longer, forming short streaks ; the marks on the temple are similar, and not quite like the former.

There are two very young specimens of this variety in spirits, which are quite alike as regards the bands on the crown ; but they differ a little in the distribution of the streaks on the sides of the temples.

Fig. 4.



Rhinoclemmys mexicana.

RHINOCLEMMYS MEXICANA. (Fig. 4.)

Head brown ; crown with a broad, uniformly wide, semicircular band over the eyes ; the sides of the head varied with yellow, and dotted with black ; the chin and throat yellow, black-dotted.

RHINOCLEMMYS ANNULATA. (Fig. 5.)

Crown white, varied with black, forming rather a radiating symmetrical figure on the back of the crown, and with a white cross band on each side of the occiput ; the temples with a broad white streak from the back edge of the orbit, and another from the front edge of the orbit, which are united together on the tympanum by a perpendicular streak behind, and then give off a streak that is continued along the side of the neck ; the sides and back of the neck black, with several broad white streaks, one arising from the centre

of the occiput, another wider from the outer margin of each side of the occiput; two narrow indistinct streaks in front of the orbit, on the upper edge of the side of the nose; fore feet with two white streaks.

Fig. 5.



Rhinoclemmys annulata.

9. List of Diurnal Lepidoptera collected by Mr. Spaight in Northern India. By ARTHUR G. BUTLER, F.L.S. &c.

The Rev. A. B. Spaight, late Missionary to Moultan, has forwarded to me a small collection of Butterflies taken by himself in the district of Jhelum on the Punjab. Although this collection consists of only 25 species, it represents all the 5 families of Diurnal Lepidoptera, in the following proportions:—

<i>Nymphalidæ</i>	3	subfamilies,	5	genera,	7	species.
<i>Erycinidæ</i>	1	„	1	„	1	„
<i>Lycænidæ</i>	1	„	1	„	2	„
<i>Papilionidæ</i>	2	„	8	„	13	„
<i>Hesperidæ</i>	1	„	1	„	1	„
	<hr/>		<hr/>		<hr/>	
	8	„	16	„	24	„

The collection is accompanied with exact localities and a few notes on habits, &c.

Family NYMPHALIDÆ, Westw.

Subfamily DANAINÆ, Bates.

Genus DANAIS, Latreille.

I. DANAIS CHRYSIPPUS.

Papilio chrysippus, Linn. S. N. ii. p. 767 (1766).

“Taken on flowers in Government garden at Gujerat.”

2. DANAIS PHILENE.

Papilio philene, Cramer, iii. pl. 275. figs. A, B (1782).

“In garden of lime- and orange-trees at Cheta, about 20 miles from Murri.”

3. DANAIS LIMNIACE.

Papilio limniace, Cramer, Pap. Exot. i. pl. 59. figs. D, E (1779).

“On blue flowers in gardens at Gujerat and Cheta.”

In consequence of the exaggerated colouring of some of Cramer's figures, I mistook the species represented on pl. 59 for another common insect inhabiting nearly the same districts, but identical with the *Euploea hamata* of M'Leay; I therefore redescribed the true *P. limniace* in my Monograph (P. Z. S. 1866, p. 52) as *Danais leopardus*, with a query as to whether it was a variety of *D. limniace*. As the number of examples taken by Mr. Spaight show no variation in pattern or coloration, we may conclude that the two species are distinct.

Subfamily SATYRINÆ, Bates.

Genus LETHE, Hübner.

1. LETHE DYRTA.

Debis dyrta, Felder, Reise der Novara, iii. p. 497. n. 860 (1867).

“Murri.”

As I have not examined the type of *L. drypetis*, I feel uncertain as to whether *L. dyrta* is or is not a slight variety of that species. Our specimens agree best with Dr. Felder's description; and therefore I adopt his name.

Subfamily NYMPHALINÆ, Bates.

Genus PYRAMEIS, Hübner.

1. PYRAMEIS CARDUI.

Papilio cardui, Linn. S. N. ii. p. 774. n. 157 (1766).

“Jhelum (town), on flowers, and at Murri.”

Genus ARGYNNIS, Fabricius.

1. ARGYNNIS NIPHE.

Papilio niphe, Linn. S. N. ii. p. 785 (1766).

“On flowers in garden at Gujerat.”

Genus ATELLA, E. Doubleday.

1. ATELLA PHALANTHA.

Papilio phalantha, Drury, Ill. i. pl. 21. figs. 1, 2 (1779).

“Murri.”

Family ERYCINIDÆ, Westwood.

Subfamily LIBYTHEINÆ, Bates.

Genus LIBYTHEA, Fabricius.

1. LIBYTHEA LEPITA.

Libythea lepita, Moore, Cat. Lep. E. I. C. i. p. 240. n. 519 (1857).
"Murri."

Family LYCÆNIDÆ, Stephens.

Subfamily LYCÆNINÆ, Butler.

Genus LYCÆNA, Fabricius.

1. LYCÆNA KASMIRA.

Lycæna kasmira, Moore, P. Z. S. p. 503, pl. 31. fig. 1 (1865).
"Murri."

2. LYCÆNA, sp. ? (near *L. laius*, Cr.).

"Murri."

Family PAPILIONIDÆ, Doubleday.

Subfamily PIERINÆ, Bates.

Genus SYNCHLOË, Hübner.

1. SYNCHLOË GLICIRIA.

Papilio gliciria, Cramer, Pap. Exot. ii. pl. 171. figs. E, F (1779).
"Taken on flowers at Gujerat."

2. SYNCHLOË NEPALENSIS.

Pieris brassicæ, var. *nepalensis*, G. R. Gray, Lep. Ins. Nepal,
p. 9, pl. 6. figs. 1 & 3 (1846).
"On flowers at Gujerat."

Genus BELENOIS, Hübner.

1. BELENOIS MESENTINA.

Papilio mesentina, Cramer, Pap. Exot. iii. pl. 270. figs. A, B
(1782).
"On flowers at Gujerat."

Genus TERACOLUS, Swainson.

1. TERACOLUS ETRIDA.

Anthocharis etrida, Boisduval, Sp. Gén. Léop. i. p. 576 (1836).
"Murri."

Genus COLIAS, Fabricius.

1. COLIAS FIELDII.

Colias fieldii, Ménétriés, Enum. Corp. Anim. i. pl. 1. fig. 5 (1855).
"Murri."

2. COLIAS SIMODA.

Colias simoda, De l'Orza, Lép. Jap. p. 10. n. 21 (1869).

"Murri."

I think it doubtful whether this is more than a modification of *C. hyale*.

3. COLIAS HYALE.

Papilio hyale, Linnæus, S. N. ii. p. 764. n. 100 (1766).

"Murri."

Genus CALLIDRYAS, Boisduval.

1. CALLIDRYAS CATILLA.

Papilio catilla, Cramer, Pap. Ex. iii. pl. 229. figs. D, E (1781).

"Gujerat; always settles on a wild plant, which (with its wings closed) it exactly resembles."

2. CALLIDRYAS PYRANTHE.

♂ var. *Papilio ilea*, Fabricius, E. S. Suppl. p. 421. u. 587, 588 (1798).

"On flowers in Government garden at Gujerat."

Genus GONEPTERYX, Leach.

1. GONEPTERYX RHAMNI.

Papilio rhamni, var. *nipalensis*, G. R. Gray, Lep. Ins. Nepal, pl. 5. fig. 1 (1846).

"Murri."

This only differs from the European *G. rhamni* in the more deeply sinuated anal margin of the hind wings.

Genus TERIAS, Boisduval.

1. TERIAS HECABE.

Papilio hecabe, Linnæus, S. N. ii. p. 763 (1766).

"In garden at Gujerat."

2. TERIAS BLANDA.

Terias blanda, Boisd. Sp. Gén. Lép. p. 672. n. 32 (1836).

"In garden at Gujerat."

Subfamily PAPILIONINÆ, Bates.

Genus PAPILIO, Fabricius.

1. PAPILIO ERITHONIUS.

Papilio erithonius, Cramer, Pap. Exot. iii. pl. 232. figs. A, B (1782).

"Common on flowers at Gujerat and at Cheta, about 20 miles from Murri."

Family HESPERIDÆ, Leach.

Subfamily PAMPHILINÆ.

Under this heading I would include all the genera having a short thick club of the *Pamphila* type to the antennæ, and terminating at a right angle in a short pointed hook, such as *Proteides*, *Carystus*, *Pamphila*.

Genus PAMPHILA, Fabricius.

1. PAMPHILA MATHIAS.

Hesperia mathias, Fabricius, E. S. Suppl. p.433. n. 289, 290 (1798).
 “Gujerat, on flowers.”

10. On some new Genera and Species of *Araneidea*.

By the Rev. O. P. CAMBRIDGE, C.M.Z.S.

(Plate XLIV.)

Among the Spiders described in the present paper are several of the greatest possible interest to the scientific arachnologist. We find one (*Stenochilus hobsonii*) presenting the almost unique character of possessing but *two* spinners* ; another (*Aphantochilus rogersii*), from Minas Geraes, Brazil, appears to be entirely without the *labium*, a portion of structure the absence of which is, I believe, unknown in any genus of Araneidea at present characterized. The resemblance of this Spider to some of the large-headed, horny, spine-bearing Ants of South America is very striking, and forms an unmistakable instance of similarity between individuals of two very widely separated groups of the Articulata. This similarity no doubt carries with it some advantage to one or the other—probably to the Spider, as being the most likely of the two to derive advantage from such a resemblance—which doubtless sums up a long succession and progress of small advantages. It is unfortunate that the term *mimicry* should have been given to this and other like curious resemblances, since that term seems to many naturalists to imply consciousness or volition on the part of the creature supposed to be the one which resembles another ; and this certainly unfounded implication casts discredit upon the deep natural truth which the resemblance embodies.

Another of the Spiders (*Moneta spinigera*) described below, is interesting as affording a tolerably certain clue to the family affinities of a small group (*Scytodes* and *Omosita*) which has appeared to me widely separated hitherto from the Theridides, with which family the genus *Moneta* seems to connect it. I observe, however, that in a work on European Spiders just published, Dr. T. Thorell, of Upsala, places this group side by side with the family

* Another instance of this peculiarity is found in the genus *Palpimanus* (Dufour).

